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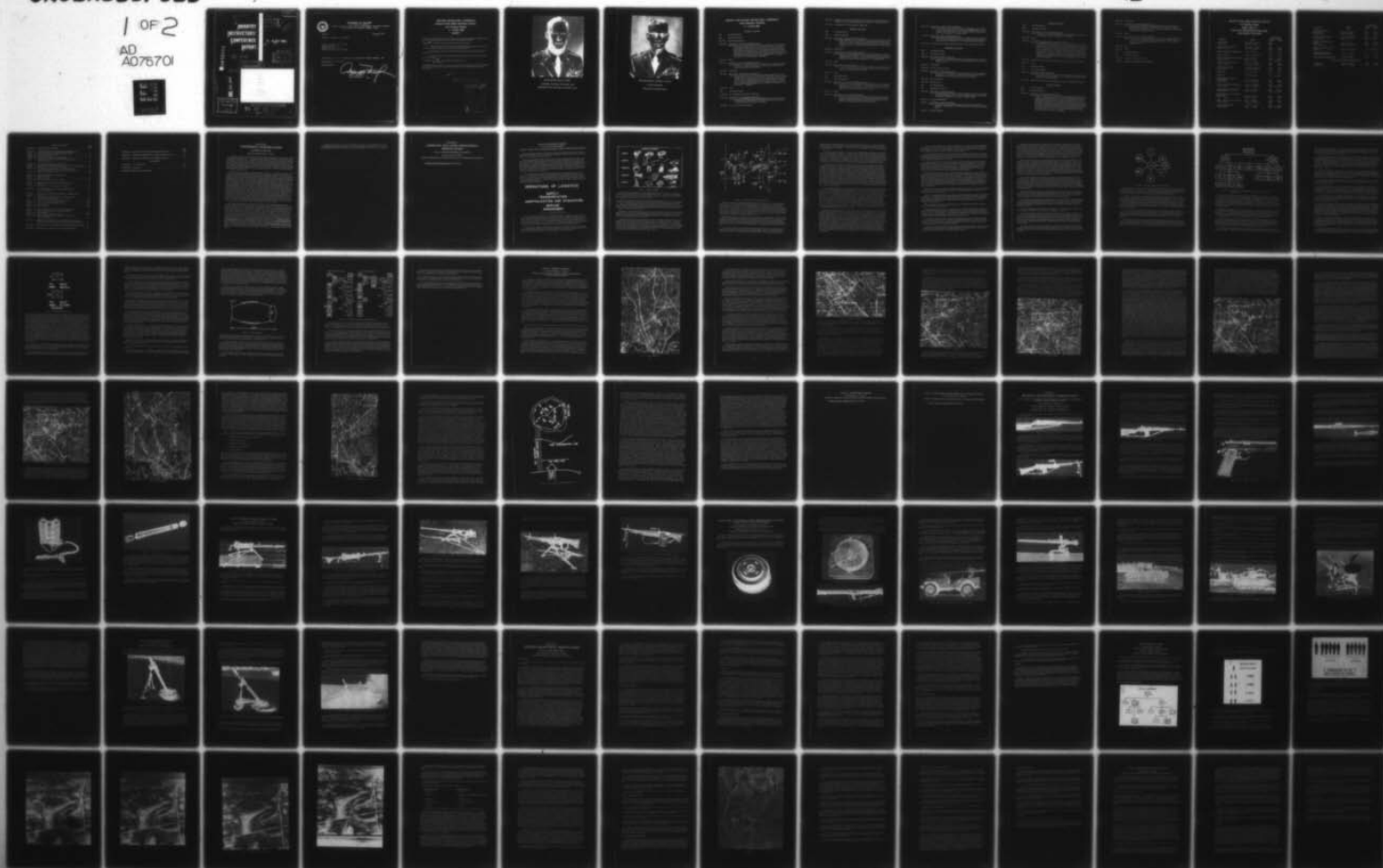
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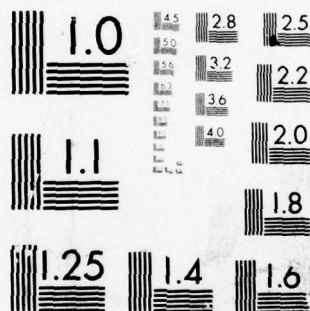
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A large, stylized handwritten signature in black ink, appearing to read "Alexander Nicolini".

ALEXANDER NICOLINI
Major, Infantry
R&D Coordinator

**INFANTRY INSTRUCTORS' CONFERENCE
UNITED STATES ARMY INFANTRY SCHOOL**

Fort Benning, Georgia

11 - 15 JULY 1960

REPORT

PURPOSE: The Infantry Instructors' Conference was convened to standardize Infantry doctrine, tactics, and technique taught at schools of the Army Educational System.

MISSION: The mission of the Infantry Instructors' Conference was:

a. To exhibit an active and constructive interest in Infantry Instructors at other service schools as primary representatives of the US Army Infantry School.

b. To bring Infantry Instructors abreast of the latest equipment, thinking and trends in the Infantry.

c. To become informed of and to discuss Infantry Instructors' problems on an individual and collective basis.

AUTHORITY: Par 22, a, (43) USCONARC Training Directive
Dtd July 1958

CONFEREES: Representatives of Army Service Schools, Colleges, and the Military Academy; Army Infantry Instructors at other Service Schools, Colleges; and Marine Corps Schools (Appendix 1).

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MAJOR GENERAL HUGH P. HARRIS

Commandant, United States Army Infantry School

Commanding General, United States Army Infantry Center



BRIGADIER GENERAL CHESTER A. DAHLEN

Assistant Commandant

United States Army Infantry School

AGENDA FOR INFANTRY INSTRUCTORS' CONFERENCE
FORT BENNING, GEORGIA
11 - 15 JULY 1960

Monday, 11 July 1960

0750	Bus Departs Billets
0805	Assemble Pratt Hall
0810-0820	Welcome-Commandant
0820-0900	<p>Presentation: Command and Staff Department Scope: Presentation of organizational concepts for employment of Infantry during the mid-range period. Includes consideration of changes in organization and equipment during the time frame 1960 through 1964 and the impact of these changes upon operational concepts of Infantry together with a statement of the requirements necessary for Infantry to accomplish its mission. Emphasizes the immediate need to make aircraft organic to the battle group and concludes with a portrayal of Infantry operations when completely airmobile forces become available. (SECRET)</p>
0900-0910	Break
0910-1000	<p>Presentation: Command and Staff Department Scope: Conference covering battle group combat logistics. Problem encompasses the following: logistical organization, supply systems, supply point locations and employment of unit trains.</p>
1000-1020	Coffee Break
1020-1200	<p>Presentation: Special Subjects Department Scope: New developments in the field of nuclear weapons employment to include weapons and delivery systems with emphasis on the Davy Crockett; nuclear weapons effects including radii of effects from Davy Crockett; incapacitation from nuclear radiation; target analysis; proposed fallout prediction system; training and assignment of nuclear weapons employment officers, and command and staff responsibilities in planning and employment of nuclear weapons. (SECRET)</p>
1200-1300	Lunch
1300	Bus Departs Billets
1300-1330	En route Bleacher #390 (Vic Victory Pond)
1330-1420	<p>Presentation: Ground Mobility Department Scope: Integrated CONFERENCE and DEMONSTRATION on the characteristics and capabilities and limitations of wheeled and tracked means of ground mobility available to the Infantry commander.</p>
1420-1500	En route to Pratt Hall and Break

1500-1700 Orientation with instructional department and USAIS office project officers and conferences with instructional departments or observe scheduled instruction.

1730-1830 Commandant's Informal Reception: Bldg 2756A

Tuesday, 12 July 1960

0740 Bus Departs Billets

0800 Assemble Pratt Hall

0800-0950 Presentation: Command and Staff Department

Scope: MAP EXERCISE involving the planning for an airmobile assault by a battle group (minus) to seize critical terrain and block enemy withdrawal; by a task force to exploit a nuclear attack against an enemy force and continue to deeper objectives in conjunction with a main attack by friendly ground forces.

0950-1010 Coffee Break

1010-1100 Presentation: Command and Staff Department

Scope: Conference encompassing principles of unconventional warfare with emphasis on guerrilla warfare. Problem includes mission and organization of Special Forces, employment of guerrilla forces by conventional forces including command and staff considerations. (CONFIDENTIAL)

1100-1110 Break

1110-1200 Presentation: Communication Department

Scope: A conference on Infantry battle group and brigade communication systems to include changes effected by new tables of organization and equipment; status of new communication equipment.

1200-1255 Lunch

1255 Bus Departs Billets

1315 Assemble Pratt Hall

1315-1405 Presentation: Airborne-Air Mobility Department

Scope: A conference on new developments in air mobility to include: 1960 Army study requirements and the Army aircraft requirements review board; (SECRET) Airborne fire support; troop test of the AC1 Caribou Aircraft; and the C130 aircraft with boundary layer control.

1405-1415 Break

1415-1435 Presentation: Special Subjects Department

Scope: Conference on the impact of the Intensified Combat Training Program in reducing combat lead time in the training of combat effective units; the Oversea Unit Replacement System and problems inherent to its implementation; Training problems reported from the field.

- 1435-1450 **Presentation: Special Subjects Department**
Scope: An orientation on the method of teaching land navigation and its relation to map reading instruction as outlined by the HUMRRO research memorandum. A brief description of the problems that have developed in implementing this program in training centers.
- 1450-1505 **Presentation: Special Subjects Department**
Scope: An analysis of the quantity and quality of medical support currently available to the Infantry battle group in view of today's increased dispersion and mobility; and a discussion of recent medical platoon TOE changes.
- 1505-1700 **Conferences with instructional departments or observe scheduled instruction.**

Wednesday, 13 July 1960

- 0740 **Bus Departs Billets**
- 0800 **Assemble Pratt Hall**
- 0800-0850 **Presentation: Ranger Department**
Scope: Conference on the employment of the rifle squad and platoon in offensive and defensive operations to include a panel discussion covering the salient feature of each.
- 0850-0910 **Coffee Break**
- 0910-0920 **En route Training Field #9**
- 0920-0940 **Presentation: Ranger Department**
Scope: Conference and demonstration to acquaint conferees with the development and objectives of the physical combat proficiency test; discussion and demonstration of new bayonet training aids and techniques.
- 0940-1000 **En route to Billets**
- 1000-1320 **Open and Lunch**
- 1320 **Bus Departs Billets**
- 1350 **Assemble Victory Pond**
- 1350-1440 **Presentation: Ranger Department**
Scope: Conference and demonstration of Ranger training to include a brief history of American Rangers, present concept of Ranger Training, future utilization of Ranger graduates, and conduct of confidence tests.
- 1440-1505 **En route to Hook Range**
- 1505-1655 **Presentation: Weapons Department**
Scope: A conference and firing demonstration covering the characteristics, capabilities, limitations and recent developments of the weapons of the battle group.
- 1655-1705 **En route to Billets**

Thursday, 14 July 1960

0740 Bus Departs Billets

0800 Assemble Pratt Hall

0800-0850 Presentation: Command and Staff Department
Scope: Conference covering the organization, equipment, tactics and techniques of employment of Davy Crockett Platoon. (SECRET)

0850-0900 Break

0900-0950 Presentation: Department of Non-Resident Instruction
Scope: A CONFERENCE which outlines the mission, organization, and major responsibilities of the department. This discussion will include comments concerning the five major non-resident programs supported--Reserve Officer Training Corps, US Army Reserve School, National Guard State Officer Candidate Schools, Reserve Components Staff Training, and the Army Extension Courses. Emphasis will be placed on the methods of preparation of non-resident material, the means of securing non-resident material to assist instructors in their class preparation, and the professional benefits that can be realized by participating in the Army Extension Course Program.

0950-1200 Conferences with instructional departments or observe scheduled instruction.

1200-1255 Lunch

1255 Bus Departs Billets

1315 Assemble Hook Range

1315-1515 Presentation: USA Infantry Board
Scope: An integrated lecture and demonstration covering developmental materiel which may be adopted for Infantry use. Will include "County Fair" display of their items. (SECRET)

1515-1700 Conferences with instructional departments or observe scheduled instruction.

Friday, 15 July 1960

0740 Bus Departs Billets

0800 Assemble Pratt Hall

0800-0850 Presentation: Combat Developments Office
Scope: A lecture presentation on future operation and organization objectives for Infantry. Considers the nature of Soviet capabilities expressed as operational and organizational trends. Includes a visualization of the future battlefield as it might be when projected into the 1965-1975 time period. Develops a requirement for the capability to fight in any type war, general or localized, nuclear or nonnuclear, and in any geographical environment. Summarizes materiel development trends within the immediate future and the 1965-1975 time period, covering such items as nuclear weapons, zero-ground pressure vehicles, all-purpose handheld weapons, and the individual soldier of the future. (SECRET)

0850-0910 Coffee Break

0910-1000 Presentation: Instructor Training Section
Scope: Integrated CONFERENCE and DEMONSTRATION to familiarize the Infantry instructor conferees with the philosophy of education as applied at the USAIS, the Instructor Training Course, organization of instructional material, and new devices and aids.

1000-1010 Break

1010-1100 Presentation: Editorial and Pictorial Office
Scope: Conference covering the capabilities of Editorial and Pictorial Office, the services that are available to Infantry instructors, assistance these instructors can render Editorial and Pictorial Office, and the importance of Infantry Magazine.

1100-1200 Open

1200-1255 Lunch

1255 Bus Departs Billets

1315 Assemble Pratt Hall

1315-1400 Assistant Commandant's Forum

1400-1415 Assistant Commandant's Closing Remarks

UNITED STATES ARMY INFANTRY SCHOOL

Fort Benning, Georgia

DIRECTORY OF STAFF AND DEPARTMENT DIRECTORS AND PROJECT OFFICERS

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Project Officer	Capt R. W. Patterson	54652	53719
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CHAPTER 1

CONFERENCE INTRODUCTION

COMMANDANT'S WELCOME

MAJOR GENERAL HUGH P. HARRIS

Gentlemen, I wanted to come down here this morning and personally welcome you on behalf of the School and the garrison. I've looked over the list and I know there are quite a few of my old friends, personally, here. I know that most of you are familiar with the Infantry School and Fort Benning. Each of you at one time or another has passed through here in the course of your career. Because of this I am sure that you will all feel at home while you are with us, and I hope you take this opportunity to reacquaint yourselves with our departments here at the School, our staff offices, and our facilities, and to renew old friendships. I think you will find the standards of the past have been upheld here. I am convinced, however, that we are in dire need of new academic facilities here.

We have two major reasons for gathering you here each year. The first is to bring you up-to-date on the Infantry and matters which we think are important. Secondly, we use this conference to assist in standardizing Infantry instruction throughout the Army. Now all of you hold professorships at our service schools, each of you occupies an extremely important assignment, a position which is vital to the growth and development of the Army and the Infantry. By means of this annual conference, we will point out the latest changes in doctrine, tactics, and techniques. Naturally, we want you to become thoroughly familiar with our new weapons we have to show, our latest advances in communication equipment, and our rapidly developing trends in air and ground mobility. But more than this, we hope to stimulate your thinking and to give you food for thought and discussion. I urge you to enter into these instructional periods wholeheartedly, and if you have found a way to solve some of the vexing problems which confront Infantry commanders anywhere in the world, share your solutions with us. If you have constructive criticisms concerning any of our new weapons or items of equipment, I know that you will feel free to speak out. If you think we have gone out on a limb in some of our doctrine, challenge us. This conference should serve as a forum for the exchange of thought-provoking ideas which will assist all of us in our jobs as Infantry instructors--and which will further the progress of our Army in this period of rapid change. In short, I sincerely hope that this meeting will be a conference where there is a mutual exchange of ideas and where there will be ideas you will share with us. Your time and our time will be worth having come to this station.

Our profession has progressed rapidly in the last few years and has made tremendous strides. I think also we have a long way to go. I am sure that it will continue to move forward just as rapidly in the future as in the past. Unfortunately, progress in one area generally means a time lag in another area. The Infantry is no different, and our most noticeable time lag is in the area of publications. It takes time to formulate, edit, staff, approve and finally publish a field manual or a technical manual on many of these subjects. It may take a year from the time we get our first directive until it is a Department of the Army pamphlet. Some manuals with controversial content take several years. But as instructors we can't afford to wait and we must have some interim solution. To help solve that problem, and it is a disturbing one, we at the Infantry School rely on the periodicals with which you are all familiar: The Monthly List of Instructional Material, the bi-monthly Infantry magazine and the quarterly Infantry School Notes. All are intended to fill this time gap until you actually receive an official document, and we feel that they perform this task well. Additionally, we have the Infantry Instructors' Conference Report. We will send you copies of this report later this summer. I believe that you will find that this is an excellent document and will be of benefit to all instructors throughout the entire school system.

Gentlemen, again may I say that we are happy to have you here. This annual conference is a rare opportunity for all of us to pinpoint and resolve problems of mutual interest. I trust you will not hesitate to speak out and share your ideas and comments. Nice to see you. Thank you.

CHAPTER 2

COMMAND AND STAFF DEPARTMENT PRESENTATION

Section I. INFANTRY DOCTRINE AND CONCEPTS

MAJOR HAROLD D. PINNEY

Instructor, Fundamentals, Review and Doctrine Section, Command and Staff Department.

See Infantry Instructors' Conference Report (Classified Annex)

Section II. BATTLE GROUP LOGISTICS

CAPTAIN CHANDLER GOODNOW

Instructor, Advanced Tactics, Personnel and Logistics Section, Command and Staff Department

Increased firepower and improved tactical mobility have enhanced the overall combat capabilities of the Infantry division. Improvement of these two facets of warfare has necessarily dispersed the battlefield in width and depth.

Tactical transport and firepower coupled with efficient communications have made it possible for the Infantry division to fight and win on the dispersed battlefield. Concurrent with the enhancement of combat capabilities, we find developing a requirement for a logistical organization which is flexible and highly responsive to the supply and service needs of the division. The logistical organization of the Infantry division is of course established by the division's TOE. The TOE, however, provides only the logistical means. The G4 must employ his vehicles, men, and equipment in a manner that will insure flexibility of operation and responsive reaction to the needs of the commander.

It is not feasible to discuss the logistical organization of the Infantry division, or any other unit for that matter, without first determining the functions that the organization is to perform. The function of the logistical organization is efficient and timely accomplishment of the operations of logistics. To the untrained, the term logistics implies supply. Supply is one of the operations of logistics; however, we find that the G4 actually is responsible for five logistical operations (Figure 1).

OPERATIONS OF LOGISTICS

SUPPLY

TRANSPORTATION

HOSPITALIZATION AND EVACUATION

SERVICE

MANAGEMENT

Figure 1. Operations of Logistics.

Receipt, storage and distribution are functions of supply. Equally important to the successful completion of this function is the timely and accurate anticipation of supply requirements. Only by accurately anticipating requirements can the wheels of the supply distribution system be put into motion. Timely movement will insure that the required supplies are at the right place at the proper time. Commanders at all levels must assist their supply officers in this regard if the operation of supply is to be efficiently accomplished (Figure 2).

Transportation entails the administrative movement of supplies, units, and individuals. This operation also encompasses the control of traffic from a traffic circulation point of view, as well as including the aspects of efficient utilization of transport means.

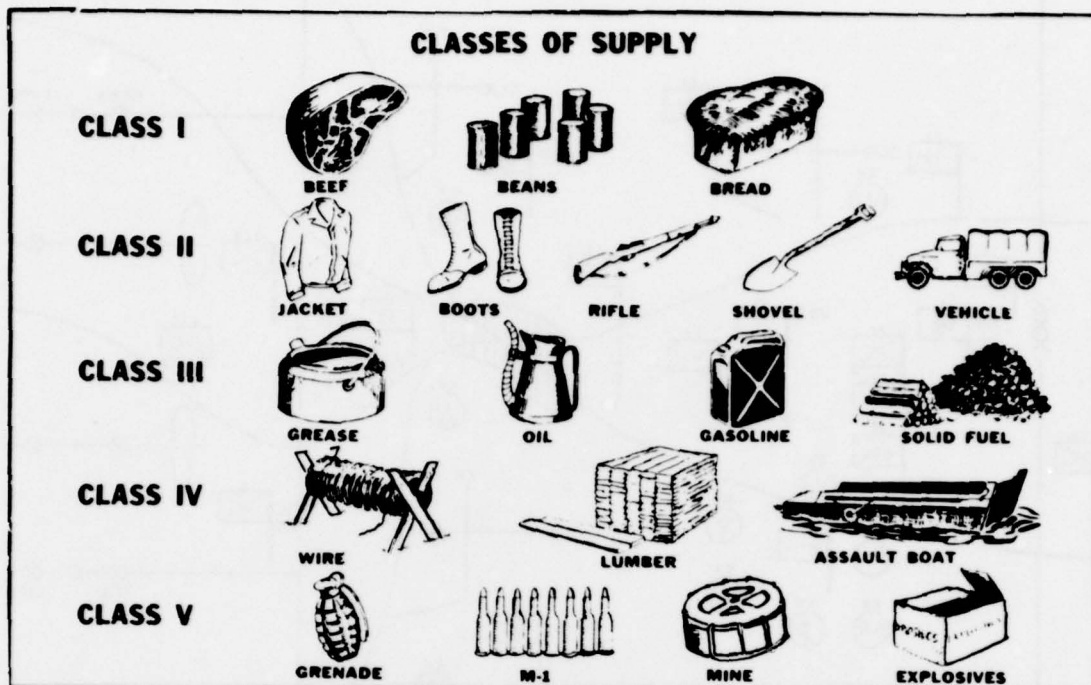


Figure 2. Classes of Supply.

Evacuation and hospitalization includes battlefield treatment, evacuation of casualties (either by land or air means), further treatment, and of course, when necessary, hospitalization. The Infantry division does not have an organic hospital. A mobile Army surgical hospital habitually operates in the division service area.

Multiple service functions are performed within the Infantry division. The more common of these are maintenance of equipment, provision of bath and laundry facilities, and food service. The most demanding and in fact the most important from an operational point of view is maintenance--it being absolutely essential that equipment provided to the division be operational. Division level elements perform third echelon maintenance, and units of the division accomplish second echelon maintenance.

Management, the final operation of logistics, is the basic function of any unit's logistician. Management, by definition, includes planning, organizing, directing, supervising, and controlling. By properly performing the operation of management, the logistician insures the efficient functioning of the other four operations.

Logistical support cannot be effectively discussed or understood without a thorough understanding of the technical service units/ elements organic to the Infantry division. All seven technical services are represented in the Infantry division. Our interest lies in three areas: initially, the basic organization of each element; secondly, the capabilities of each; and finally how these units are employed to retain flexibility and responsiveness concurrently to the needs of the division. Understanding of the following discussion of the division technical services will be facilitated by frequent reference to Figure 3 below.

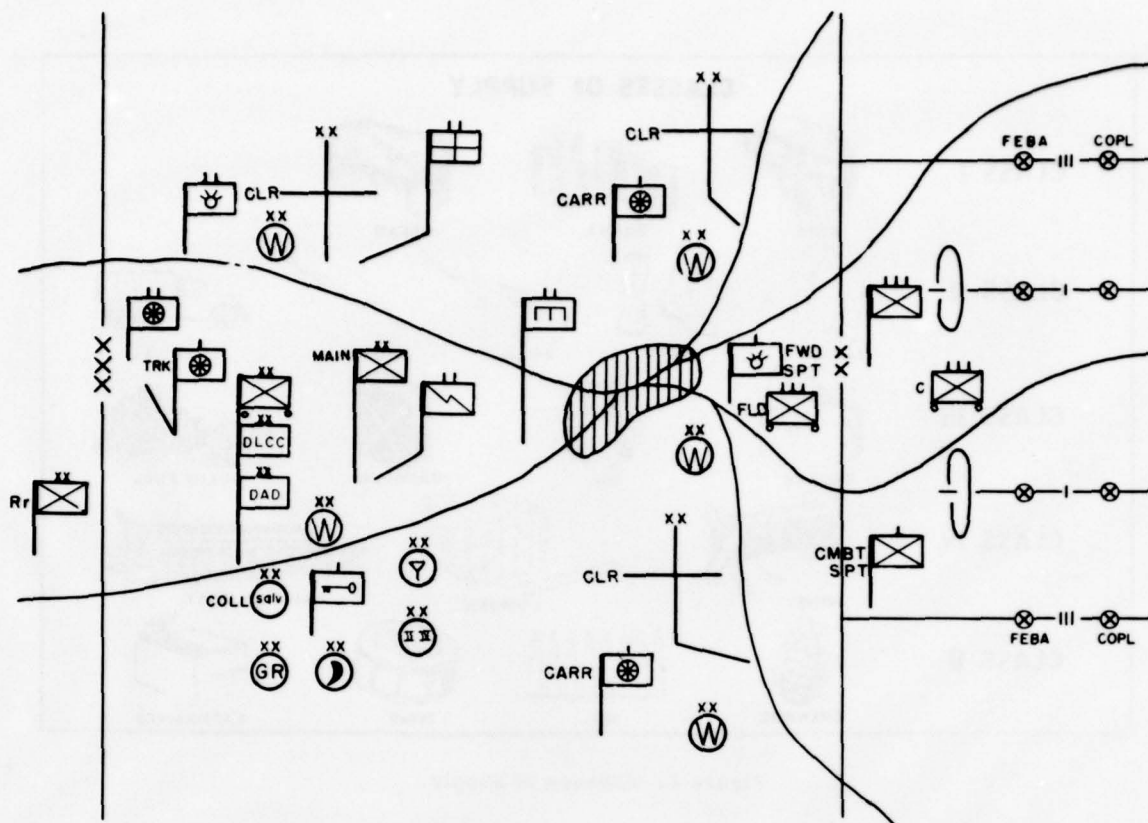


Figure 3. Logistical Means, Infantry Division.

Organic to the division headquarters and headquarters company is the chemical and radiological section. The section provides radiological survey and advises the commander and staff on the tactical employment of chemical munitions. Those functions are not logistical. To perform its mission well, the chemical section must be located within the division command post complex. Logistically, the chemical section executes Class II and IV chemical supply support for the division and to a very limited degree performs third echelon maintenance on chemical equipment organic to the division. Maintenance is limited, due primarily to the fact that only two chemical repairmen are authorized the section.

Signal communication, the primary function of the division signal battalion, dictates that the headquarters and headquarters company of this battalion be positioned in close proximity to the division command post. The TOE of this unit also authorizes the division signal supply and maintenance section. Its functions are Class II and IV signal supply support for the entire division and third echelon maintenance (field maintenance) of signal equipment organic to the division.

The command operations company of the division signal battalion is completely an operational unit. Its primary function of course is communication. However, the forward communications company, which habitually supports each battle group with a battle group area

support platoon, facilitates third echelon maintenance at battle group level. Each of the five battle group area support platoons has a forward repair section which is capable of performing limited third echelon maintenance. This section is readily available to assist the battle group it is supporting.

The division engineer battalion is organized with a headquarters and headquarters company and five combat engineer companies. It is primarily an operational organization. Its basic mission is to provide combat engineer support for the Infantry division. The battalion executes Class II and IV engineer supply support for the entire division through its battalion supply section organic to headquarters and headquarters company. This same section operates five water supply points. Third echelon maintenance of engineer equipment is accomplished by the field maintenance section, also organic to the battalion headquarters and headquarters company.

Transportation, quartermaster, ordnance, and medical units habitually operate with the Infantry division trains. Control of the division trains is provided by the headquarters and headquarters detachment, Infantry division trains, and Infantry division band. This TOE organization authorizes a colonel (MOS 1542) as commander, and a staff consisting of an S1, S2 and S3. The executive, a lieutenant colonel, carries a supply MOS. In addition to the band, the TOE also provides the necessary administrative personnel to support operation of the division trains. The function of the trains commander and staff is to exercise tactical control over the elements of the division trains. This mission includes tactical disposition, tactical training, responsibility for movement, and security of the division trains. Further missions, for planning and execution, normally given the trains commander are rear area security and rear area damage control. Communication for the trains is provided by the trains area operations platoon of the command operations company, division signal battalion. To facilitate communication, control, and efficient operations, the division trains is normally positioned centrally within the division service area.

The transportation battalion, with its headquarters and headquarters company, truck transport company, and two armored carrier companies, performs multiple missions for the Infantry division. Tactical mobility for selected units of the division is accomplished by the two armored carrier companies. Each company contains three platoons, each equipped with nineteen carriers. The one hundred and fourteen carriers available are capable of lifting the walking elements of nine rifle companies. When the carrier companies are not in support or attached to a forward battle group, they will normally occupy assembly areas forward in the division service area. The truck transport company, organized with four platoons of twenty 2 1/2-ton trucks each, provides administrative transportation for the movement of supplies, equipment and personnel. These vehicles are also used to motorize selected units of the division to facilitate their tactical employment. The truck transport company's daily mission is to provide transportation for the distribution of supplies within the division, and therefore, it is centrally located within the division service area.

Headquarters and headquarters company contains the division transportation section, which habitually operates with the Division Logistical Control Center. In addition, the division transportation supply officer is found in this unit, and his mission is to provide Class II and IV transportation supply support for the units of the division. The maintenance platoon of headquarters and headquarters company contains one truck maintenance section and two carrier maintenance sections. These sections perform second echelon maintenance on the trucks and carriers of the transportation battalion. When a carrier company or a reinforced carrier company supports or is attached to a battle group, a carrier maintenance section will normally accompany the attachment, thus providing the supported battle group with second echelon track vehicle maintenance means. Until recently this battalion had an organic aircraft maintenance detachment which performed third echelon maintenance on the aircraft of the division aviation company. The aircraft maintenance detachment is currently a separate transportation unit organic to the division and performs the same mission as the detachment formerly organic to the transportation battalion.

The quartermaster company represents the QM Corps and provides normal QM supply and service support. It is worthy of note that this company does not contain any cargo vehicles for the distribution of Class I, II, and IV supplies. The company is organized with a supply platoon, a bath section, and in combat a graves registration platoon.

The supply platoon's Class I section operates the division Class I distributing point. Army normally delivers Class I supplies to division. The QM company's Class I section will then deliver (unit distribution) Class I supplies to the elements of the division, using vehicles provided by the transportation battalion truck company.

The Class II and IV section of the supply platoon receives and distributes Class II and IV quartermaster supplies. These items are normally distributed with the rations. Two aerial supply specialists are organic to this section, which is equipped with thirty-two 500-pound cargo parachutes and thirty-two 500-pound cargo nets. The personnel and equipment of this section team up with the division aviation company to facilitate aerial delivery of supplies. This section also performs third echelon maintenance on QM equipment.

The Class III section operates the division Class III distributing point. To accomplish supply point distribution at Army supply points, it is equipped with five 5000-gallon semitrailers. These vehicles also transport the division Class III reserve. The section also contains thirty 1200-gallon tank trucks. These vehicles are used to effect unit distribution to elements of the division, and they also provide these units with a means of bulk distribution. Tankers are placed in support of battle groups on a need basis. A mechanized battle group, reinforced with a tank company, performing an exploitation mission may have as many as six tankers in support. Conversely, a battle group in a position defense posture may be adequately supported with only one tanker.

Bath facilities are made available by the QM company's bath section. This section contains six 24-head shower units. Each unit is capable of independent operation, and bath service is usually performed on an area basis.

Collection, identification, and evacuation of the dead is the function of the graves registration platoon. This platoon establishes and operates the division graves registration collecting point. Further, the platoon has six organic collection and evacuation sections. One of these sections habitually supports a battle group and provides each supported unit with a graves registration collecting point.

The quartermaster company and the facilities that it establishes are normally centrally located in the division service area.

Administrative control of Class V resupply; Class II, and IV ordnance supply support; and third echelon maintenance on vehicles, weapons, and fire control instruments are the responsibilities of the ordnance battalion. This battalion is organized with a headquarters and main support company, which operates in the rear portion of the division service area, and a forward support company, operating forward in the division service area.

The division ammunition office, organic to the headquarters and main support company, exercises administrative control over Class V resupply for the division. This agency, which actually contains no ammunition, may be located either at the DLCC or at the entrance to the Army Class V supply point, supporting the division.

Headquarters and main support company performs Class II and IV ordnance supply support and third echelon maintenance on all ordnance equipment within the division. Further, this unit provides backup support for the forward support company.

The forward support company, organized with a maintenance platoon and six direct support sections, executes ordnance support for the five battle groups and any other units positioned in the forward portion of the division service area. A direct support section is habitually in support or attached to a battle group. This section performs a limited amount of third echelon maintenance on all types of ordnance equipment organic to the supported unit. In addition, this section distributes repair parts on a direct-exchange basis. Until recently this section was titled a direct support platoon; however, the section has the same capabilities as the platoon, with one exception, it does not have an organic cook. To perform its mission, this company, as its name implies, must be positioned forward in the division service area.

Medical support for the division is accomplished by the division medical battalion. This battalion contains a headquarters and headquarters detachment, an ambulance company, and a clearing company. Class II and IV medical supply support is accomplished by the division medical supply and battalion supply section of the headquarters and headquarters detachment. Expendable medical supplies are distributed to using units through medical channels. Nonexpendables are distributed in the same manner as supplies of other technical services. Field maintenance on medical equipment is for the most part impractical, due to the nature of the equipment. Therefore, the maintenance section of headquarters and headquarters detachment performs essentially second echelon maintenance. Equipment nonrepairable here is normally evacuated to units performing depot maintenance.

The clearing company and the ambulance company, each organized with three platoons, operating jointly, establish three clearing stations complete with ambulance support. Two clearing stations operate forward in the division service area to provide area medical support for forward units of the division. The twelve 3/4-ton ambulances of each ambulance platoon evacuate casualties from the aid stations of the forward units to the division clearing stations. The third clearing station is utilized as a leapfrog capability to support offensive or retrograde operations. It may also be employed in connection with rear area damage control or rear area security operations.

The final unit normally functioning with the Infantry division trains is the administration company. This unit provides personnel and administrative services. Organic to this company is a replacement section capable of handling 300 replacements at one time. The administration company provides the nucleus for the division rear command post.

To be effective, logistical support regardless of type, must be timely. To assure timeliness and responsiveness to supply and service needs, the division employs a logistical control center appropriately titled division logistical control center (DLCC). This is not a TOE organization. Personnel and equipment for operation must be obtained from other sources organic to the division.

The DLCC is organized as indicated in the chart below. This organization is flexible and varies slightly depending on the mission(s) it is organized to perform.

The division trains commander is normally the commander of the DLCC (Figure 4). He utilizes his own staff to provide the DLCC with a rear area security and damage control element. A G4 representative is usually present, inasmuch as matters handled here are of direct interest to the G4 and must comply with known policies and directives of the commander. Other possible representatives include QM, medical, Army aviation, division transportation section, DAO, signal, and military police. Representatives are added or subtracted as the need demands.

The DLCC maintains a current administrative situation map indicating location of distributing and supply points, both organic and Army operated, levels of supply, traffic control and circulation plans, route conditions, and transportation availability to include both vehicle and aircraft.

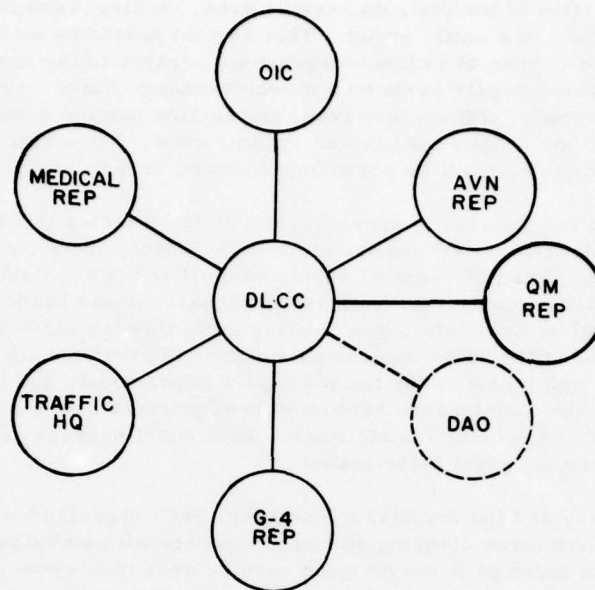


Figure 4. Division Logistical Control Center.

Routine requests for supply or service requirements are forwarded from battle groups to the appropriate division supply agency. Each agency then coordinates transportation requirements with the DLCC. The function of the DLCC is to make expeditious use of available transport and concurrently responsive reaction to the requests of the supply agencies.

Emergency supply and service requests are forwarded from battle group direct to the DLCC. Radio communication is provided the DLCC through the joint use of the division trains communication platoon of the signal battalion with the trains headquarters. The DLCC, upon receipt of the emergency request, then marries up the required support or supplies with the necessary transportation, and thereby expedites accomplishment of the mission. Aircraft delivering ammunition to a forward battle group may be predesignated to evacuate casualties from this same battle group to division medical facilities. This insures profitable payloads in both directions of flight.

It is of interest to note that much of the division trains organization is specifically designed and used for direct support of the battle groups. This type organization is based on the retention of flexibility at division level and is pointed out here to illustrate that battle group cannot provide logistical support for itself without routine reinforcement from divisional agencies.

At the battle group level the S4 is guided by the same principles as the division G4. He must retain flexibility to cope with changes on the battlefield and employ logistical means in a manner which can be responsive to the needs of the supported units. The bulk of the logistical means at battle group level is organic to headquarters and headquarters company (Figure 5).

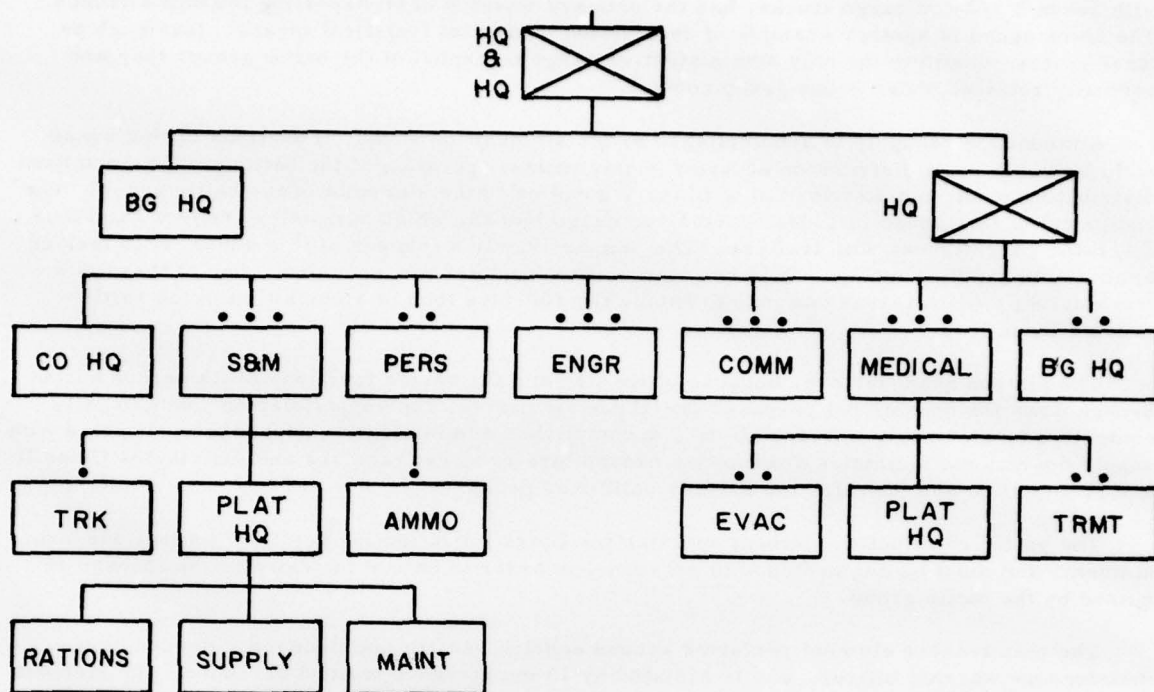


Figure 5. Headquarters and Headquarters Company, Infantry Division Battle Group.

Medical evacuation is, of course, a function of the battle group surgeon. The surgeon, under the staff supervision of the S4, prepares and directly supervises the medical evacuation plan. Execution of this plan is accomplished by the medical platoon, organized as shown on the chart above. The treatment section, operating in conjunction with the ambulance section, is capable of establishing and operating two aid stations. The fourteen 1/4-ton ambulances evacuate from the forward companies to the aid stations. Treatment is given here, and further evacuation, if necessary, is accomplished by division ambulances or air vehicles to division clearing station(s).

Command communication is the primary function of the communication platoon. This platoon is operational in nature; however, it does perform a service function which is of prime importance, i.e., second echelon maintenance of signal equipment. The maintenance means of this platoon is enhanced by the forward repair team, battle group area support platoon, division signal battalion, which performs limited third echelon signal maintenance.

Combat engineer support is the primary function of the battle group engineer platoon. Logistically, this platoon must be considered, because it functions periodically in support of logistical operations. Its equipment is used to accomplish minor road and bridge repair. Further, organic to this platoon is the Infantry entrenching set #2. This equipment is issued directly to forward companies for use in the preparation of field fortifications.

The majority of the logistical means of the battle group is contained in the supply and maintenance platoon. Organized as you saw on the preceding chart. The truck squad, equipped

with seven 2 1/2-ton cargo trucks, has the primary mission of transporting the unit kitchens. The truck squad is another example of centralized control of logistical means. Inasmuch as these trucks constitute the only administrative cargo transport of the battle group, they are normally retained under battle group control.

Ammunition resupply is accomplished by the ammunition squad. Functions of this squad include supply point distribution at Army supply points; operation of the battle group ammunition distributing point; and distribution of Class V supplies to the elements of the battle group. The equipment of this squad includes seven 5-ton cargo trucks, which pull water trailers, and four 2 1/2-ton cargo trucks with trailers. The primary known weakness of this squad is its lack of ammunition handling means. Only two ammunition handlers are provided. One of these is a truck driver, which leaves one man to handle the 100-plus tons of ammunition in the battle group's basic load.

The platoon headquarters, because of its size and the varied functions of its personnel, is broken down for operational purposes into three elements. The supply element, functionally controlled by the supply warrant officer, accomplishes administrative paperwork connected with supply operations; maintains ammunition expenditure records; receives and distributes Class II and IV supplies; and operates the salvage collecting point.

The ration distribution element operates the Class I distributing point. This is a one-man element, and must be augmented with personnel in order to handle the daily ration tonnage required by the battle group.

The maintenance element performs second echelon vehicle maintenance. Headed by a maintenance warrant officer, who is assisted by 15 maintenance trained personnel, the element is equipped with two 2 1/2-ton maintenance trucks, a 3/4-ton contact team vehicle, and one 5-ton wrecker. The section is reinforced by the direct support ordnance section, forward support ordnance company, division ordnance battalion, which performs third echelon maintenance.

When considering vehicle maintenance within the battle group, thought must also be given to the means available within the combat support company. This unit has seven maintenance trained personnel plus a 3/4-ton contact team vehicle, a 2 1/2-ton wrecker and a 2 1/2-ton cargo truck for hauling ammunition.

When functioning under combat conditions, the units of the company are dispersed laterally and in depth. This dispersion, coupled with the inadequacy of authorized tool sets, precludes the mechanics of combat support company from performing effective maintenance. This same dispersion precludes the company from operating an ammunition distributing point. Therefore, the maintenance means of combat support company is operationally controlled by the battle group S4 and utilized to augment the battle group maintenance element. The 2 1/2-ton ammunition truck of company headquarters is employed in the same manner, except that it augments the means of the ammunition squad.

Responsive reaction and flexibility are strived for at battle group as well as division. Flexibility is retained through centralized control of logistical means, and responsive reaction is accomplished by effective employment on the ground. The battle group currently uses the combat and field trains concept. Combat trains, employed forward in the battle area, consist of those vehicles, supplies and personnel required for the immediate support of the combat mission (Figure 6).

Field trains consist of those vehicles, supplies, and personnel not required for the immediate support of the combat mission. Field trains are positioned in the rear of the battle group area or in the forward portion of the division service area. By definition, essential items

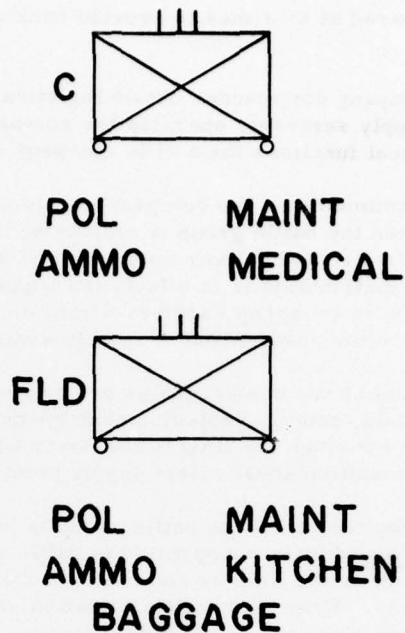


Figure 6. Combat and Field Trains.

required in the combat trains are ammunition, fuel, maintenance, and medical support. The entire medical platoon is normally employed forward. Although a functional part of combat trains the medical element is controlled directly by the battle group surgeon. Ammunition, fuel, and maintenance facilities (to include vehicle evacuation means) are provided as required. As an example, experience has proved that Class V requirements to support pursuit or exploitation operations are low when compared to the requirements for position defense. Conversely, fuel and maintenance requirements are large when supporting exploitation, and are comparatively small during defensive missions. The most critical maintenance performed in the battle group is accomplished forward in the battle area. These are repairs requiring little time for completion, and repairs which, if rapidly accomplished, will return the vehicle to action. This type repair is particularly critical when the battle group is mechanized. When mechanized, the loss of a carrier or two materially reduces the combat power of a rifle company. Since forward maintenance is so important, the battle group motor officer is placed in charge of the combat trains. As commander of the trains, he is responsible for distribution of Class III and V supplies to forward companies, as well as vehicular maintenance. The motor officer also controls the movement of the combat trains and is responsible for their local security. He utilizes a utility 1/4-ton truck and an AN/PRC-10 radio set for transportation and communication.

The field trains are controlled by the assistant S4 (supply and maintenance platoon leader) and are positioned well to the rear. The S&M platoon leader is equipped with a 1/4-ton truck and an AN/VRC-18 radio set. At this location are found the Class III, V, and maintenance means not required forward in the combat trains.

In addition, functioning in the field trains is the battle group Class I distributing point; the supply element; the direct support ordnance section; the collection and evacuation section

(graves registration collecting point); the unit kitchens, when not under unit control; and the salvage collecting point. The functions performed are basically maintenance and administration. The field trains are prepared at all times to provide back up support for the combat trains.

How then does the rifle company commander obtain logistical support? The rifle company, under the control of the unit supply sergeant, operates the company distributing point (CDP). It is at this location that logistical functions for a rifle company take place.

Having a requirement for ammunition, the company supply sergeant sends an informal request to the combat trains. When the battle group is employing unit distribution, the combat trains will dispatch a vehicle forward and deliver the requested ammunition to the company distributing point. If supply point distribution is in effect, the supply sergeant will dispatch one or more of the three 3/4-ton trucks (weapons carriers 81mm mortar squads) to the combat trains conveniently located where the ammunition is readily available.

Ammunition supplies carried by the combat trains are replaced by exchanging empty vehicles for full vehicles with the field trains. Replenishment by the field trains is accomplished via a formal request transmitted through the DAO to the Army Class V supply point, where vehicles of the battle group ammunition squad effect supply point distribution.

Distribution of Class III supplies within the battle group is normally accomplished using bulk dispensers. The 1200-gallon tankers supporting the battle group from the division QM company may be positioned in either the field or combat trains or both. When so positioned, they act as mobile filling stations. When the tactical situation permits, tankers may deliver fuel forward, to include positions along the combat outpost line. The use of 5-gallon cans is kept to a minimum since bulk dispensing is faster, more efficient, and less labor consuming.

Companies requiring Class I, II, and IV supplies submit informal request to the field trains. The supply element transforms these into formal requests and submits them to the appropriate division agency. Division normally distributes Class I, II, and IV supplies to the battle group, using unit distribution, Class II and IV supplies being distributed with the rations. Similarly, at battle group level these three classes of supply are usually delivered on battle group transport to the requesting unit. Many Class IV items, such as fortification materials, are issued automatically by higher headquarters and consequently no informal request is required from the using unit.

With respect to maintenance, a company commander having an unserviceable vehicle or a battle damaged vehicle merely requests assistance from the combat trains. A contact team is sent forward from the combat trains to make repairs. If repair is impossible the vehicle is evacuated to the field trains. While discussing vehicle evacuation, it is noteworthy that an armor battalion or an armored Infantry battalion has available approximately one medium recovery vehicle per 13 track vehicles. The best a mechanized battle group can attain is approximately one recovery vehicle per 43 tracks. In this respect, the Infantry division is dangerously under equipped.

So far I have related this concept to defensive operations only. Is it equally adaptable to the offensive? Not only is the combat and field trains concept appropriate for the offensive, but it adapts itself more readily.

A mechanized battle group reinforced with armor can expect to execute exploitation type operations.

If the battle group attacks on a single axis, organization of the combat trains is easily accomplished. Upon completion of his logistical estimate, the S4 will merely allocate the combat

trains the required quantities of Class III, V, and maintenance support. However, a battle group attacking in single column constitutes a column some 15 to 20 kilometers in length. In most tactical situations this is not desirable. Therefore, the battle group normally attacks in multiple axes. The combat trains, if placed on the axis of advance carrying the main attack, can provide excellent support for the forces moving on this axis. However, in order to provide logistical support for forces moving on the other axis or axes, several conditions must exist: the distance between each axis must be comparatively short if timely support is to be rendered; the terrain between the axes must be devoid of enemy since fuel and ammunition vehicles are not protected from enemy fires; and an excellent road net for lateral movement must exist since the logistical vehicles travel on wheels.

Seldom, if ever, will these conditions exist. Therefore, the S4 must organize combat trains to support tactical forces on the axis of advance making the main attack. Combat trains detachments are then organized to support forces making the secondary attack. As an example, consider this situation. A mechanized battle group reinforced with two tank companies and other normal combat and combat support units has the mission to seize an objective approximately 60 kilometers beyond the line of departure (Figure 7).

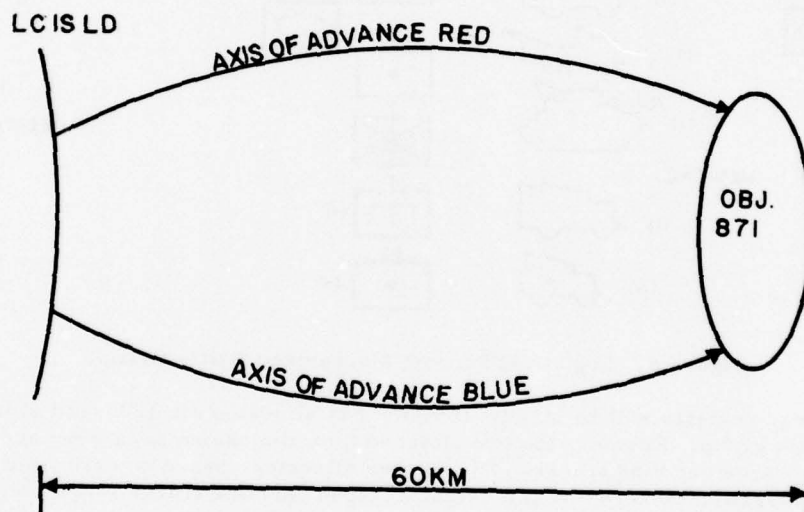


Figure 7. Tactical Situation.

The S2 estimate has determined two good avenues of approach into the objective area. The S3 has recommended that the battle group attack on two axes of advance and, following the commander's decision, directed the organization for combat (Figure 8).

To organize logistical means for the support of this operation, the S4 must complete his mental logistical estimate. Having determined that the tactical plan can be supported, the S4 then organizes his combat trains providing sufficient means to satisfy the estimated requirements. The main attack utilizing axis of advance BLUE is composed of one medium tank company and three mechanized rifle companies plus combat and combat support units. How will the S4 organize the combat trains?

He first considers control. Since the SOP names the battle group motor officer as commander of the combat trains, the MTO is equipped with a 1/4-ton vehicle and radio and placed in charge.

Medical support is allocated by proportionately splitting the battle group medical platoon. In this case, a 3/4-ton vehicle (carries medical equipment), the surgeon's 1/4-ton truck and eight 1/4-ton ambulances are allocated the combat trains.

The identical procedure is used to provide logistical support for forces attacking on axis of advance RED. As organized above, the S4 has assured that each force has sufficient logistical support immediately available to sustain tactical operations.

When properly supported by division, the battle group has sufficient logistical means to sustain continuous logistical support. If the combat and field trains concept is employed with careful planning and supervision, the commander can rest assured that his logistical organization is flexible and will be responsive to the needs of the battle group.

Section III. AIRMOBILE OPERATIONS

CAPTAIN FRANKLIN L. WILSON

*Instructor, Advanced Tactics, Intelligence and Operations Committee,
Command and Staff Department*

The subject we will discuss for the next two hours concerns airmobile operations. This type of operation is relatively new and has been, and still is, undergoing rapid changes in technique as we become more adept in using air vehicles. The airmobile operation, in any of its many forms, is not to be considered a special operation. Instead, it is to be considered a normal part of everyday battlefield operations. This instruction is presented to supplement other tactical principles--to expand basic techniques and give the commander more flexibility in ground operations.

By definition, airmobile operations can be considered airborne operations. There is a distinct difference between airmobile operations and parachute operations in that we are dealing with only one service--the Army--hence the terminology "unilateral airborne" operations. The means of transport is Army transport aviation. This means of transportation is attached to the commander, and the command relationship between the commander of the airmobile force and the aviation commander is the same as that of any other attached supporting unit. This command relationship highlights an important advantage inherent in airmobile operations, but it also places additional responsibilities on the already overburdened battle group commander and his staff planners. We will discuss some of these responsibilities as we go through this problem.

To give us a basis for discussion, we have created a hypothetical tactical situation (Figure 1). The situation is this: United States forces are attacking to the east, engaging Aggressor forces along the Chattahoochee River. The 10th Infantry Division has forced crossings over the Chattahoochee in the Fort Benning vicinity. At present, the 2d Battle Group, 10th Infantry and 2d Battle Group, 7th Infantry and 3d Reconnaissance Squadron, 7th Cavalry are in contact with the enemy. The 1st Battle Group, 87th Infantry and elements of 2d Battalion, 69th Armor are across the river in assembly areas. The 2d Battle Group, 29th Infantry and 2d Battle Group, 15th Infantry are west of the river waiting to cross. Both sides have used nuclear weapons.

U.S. Air Force can maintain air superiority over local areas for limited periods of time.

There are an estimated four enemy rifle battalions now occupying defensive positions along the high ground west of Highway 27. Along the Ochillee Creek is a line of entrenchments which are apparently unoccupied. Additional positions are being dug along Buena Vista Road, presumably by enemy reserve elements. An estimated tank regiment is reported some 19 kilometers north of Eelbeck in a dispersed assembly area. Approximately 16 tanks were reported moving west along Red Diamond Road at 1655 hours. The enemy is expected to defend in present positions.

It is now 1700 hours on problem day. The 10th Infantry Division is preparing to continue the attack at 0530 tomorrow morning. The division plan is this: The main attack is to be made by 2d Battle Group, 7th Infantry, reinforced with one company of tanks and mechanized with armored personnel carriers, along axis of advance BROWN to linkup with an airmobile force at Objective Y and continue the attack to seize the south (right) half of Objective 101 which is the division objective. The secondary attack is to be made by 2d Battle Group, 10th Infantry, reinforced with two tank companies, along axis of advance YELLOW to linkup with an airmobile force at Objective X and continue the attack to seize the north (left) portion of Objective 101.

The 1st Battle Group, 87th Infantry, which is the unit we are most interested in, is given the mission of conducting two different airmobile operations. First, the battle group is to release to division control a task force consisting of two rifle companies, one section from heavy mortar platoon, and a command group. This task force, which has been designated Task Force Dragoon, will land and destroy the enemy at Objective Y and prepare to attack to the west to assist 2d Battle Group, 7th Infantry in making a penetration.

The battle group minus, which consists of three remaining rifle companies, the remaining section of heavy mortar platoon, and elements of combat support company, is to land and seize Objective X to block enemy reinforcement and withdrawal along the major road network.

Now let us discuss the plan of Task Force Dragoon from 1st Battle Group, 87th Infantry which is to destroy the enemy on Objective Y. The battle group commander has assigned his deputy commander to command the task force. Additionally, he has designated the following battle group elements to comprise Task Force Dragoon: Company D, Company E, Second Heavy Mortar Platoon, one Medium Range Radar Team, two Short Range Radar Teams, two squads Assault Weapon Platoon, and necessary command and control personnel.

More recent intelligence information reveals aggressor armored units located at 9884 and 0381 (Figure 1), believed to be the tanks earlier reported moving along Red Diamond Road. The weather forecast is favorable for airmobile operations. The division commander plans a nuclear preparation of five weapons, to be delivered at H-15 minutes. Four of these nuclear weapons will be delivered as shown on Figure 1. The fifth, a two kiloton weapon, will be delivered on the enemy position at Objective Y, the exact desired ground zero to be recommended by the Task Force Dragoon commander. Two landing zones, Landing Zone BLACK and Landing Zone BLUE (Figure 1) are available in the vicinity of Objective Y. Either of these landing zones is capable of accommodating 50% of the helicopter lift required for Task Force Dragoon.

This solution illustrates one type of mission which may be assigned to airmobile forces. It is a mission which requires a force to land and accomplish a tactical mission, and then move to some other location to continue tactical operations. The unit may be required to move deeper into enemy territory, toward the flanks, or toward the line of contact; the idea is to move on and not be pinpointed by the enemy and summarily destroyed by him. As this type of mission applies to Task Force Dragoon, we see that the task force is required to destroy the enemy on Objective Y and then move on order toward the line of contact to assist the 2d Battle Group, 7th Infantry in making a penetration of enemy positions.

Landing Zone BLACK is selected to be used by the task force. It is desirable to land on or adjacent to the objective. Landing Zone BLUE is therefore the more desirable location, but Landing Zone BLUE is within the enemy position. In order to use Landing Zone BLUE, the enemy located there will have to be destroyed or otherwise neutralized. This can be done by nuclear or nonnuclear fires, but in any event the landing zone will be obstructed by debris, fire, and smoke, and by induced radiation if nuclear weapons are used. Landing Zone BLACK is located some distance from Objective Y, but is undefended, therefore the airmobile force can expect to land there without sustaining unacceptable losses, and still be well disposed to reach Objective Y rapidly.

Control measures used are the ordinary measures used and are kept to a minimum (Figure 2). The task force commander decided that he needed a strong attacking echelon, hence both rifle companies will make a coordinated attack. To control this attack, a boundary is used as a means of coordinating maneuver and fire support. A line of departure is used to coordinate initial movement. Because of the short distance involved, these measures are all that are needed

support of the task force, to be emplaced as directed by the task force commander to provide additional surveillance over a dangerous avenue(s) of approach. One assault weapon squad is attached to each rifle company to provide additional antitank support readily available to the rifle companies.

We will now turn our attention to the operations of 1st Battle Group, 87th Infantry (-) around Objective X. This requirement illustrates another type of mission for airmobile forces. This is a type mission which requires a unit to land and seize certain key terrain features, and then to defend that terrain to deny the enemy its use. Thus we will develop a rather circular position--ultimately a perimeter defense. In our discussion of the planning done by 1st Battle Group, 87th Infantry (-) we will illustrate this type of mission. Specifically, 1st Battle Group, 87th Infantry (-) is ordered to land and seize Objective X and to hold it to deny the enemy use of the road net to withdraw or reinforce.

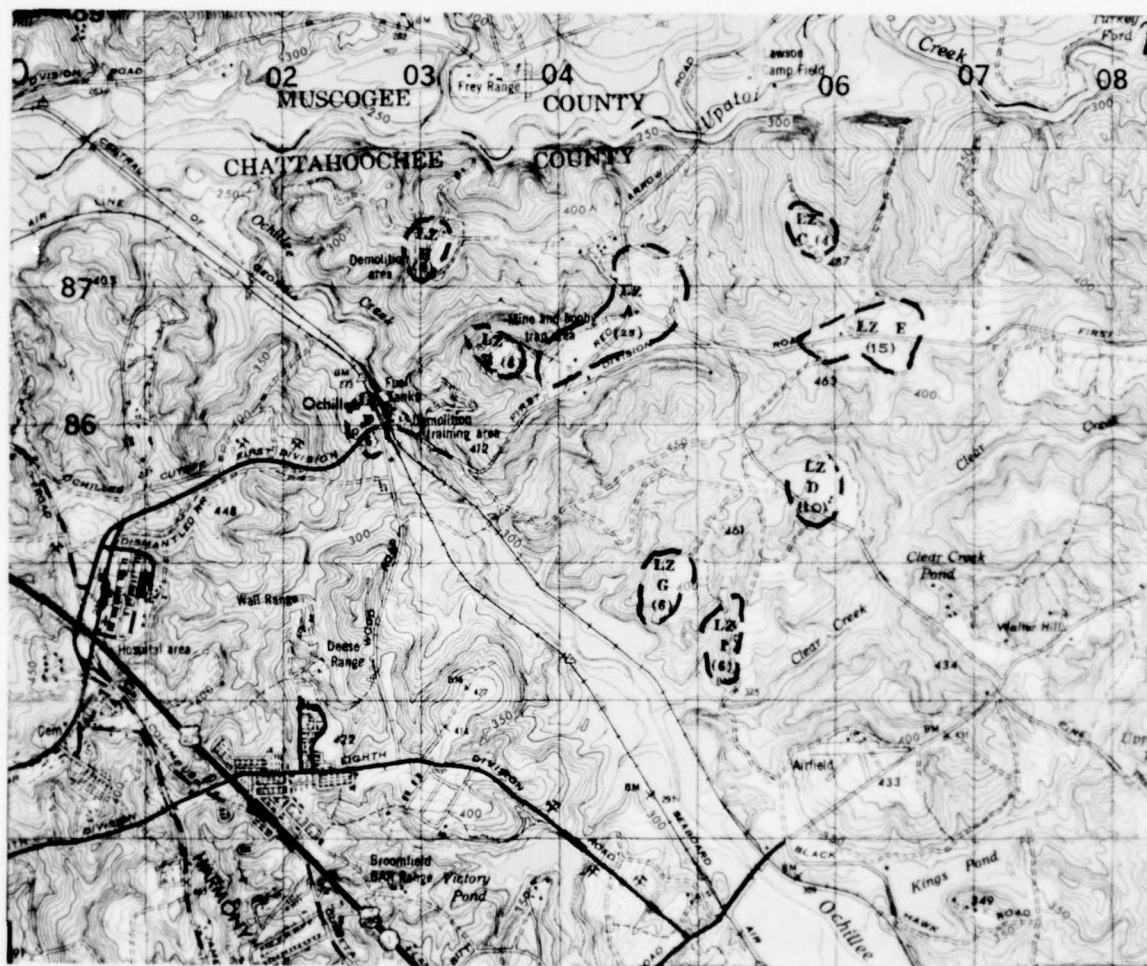


Figure 3. Landing Zones

Our discussions will follow a sequence which is called backward planning sequence. That is to say, we will begin our planning with the scheme of maneuver of the tactical plan for seizing and defending the objective area. Then we will discuss plans for landing to best support the scheme of maneuver. Then we will discuss the air movement, and then plans for

loading. This method of planning backwards from the objective area to the loading area is characteristic of any airmobile operation. We do not imply that the staff must complete one portion of the overall plan before working on the next portion. The planning staff works concurrently on all phases of the operation, but the general sequence of backward planning insures that all phases of the operation are mutually in agreement.

To assist the commander in developing his operation plan, the battle group S2, working with the liaison officers from the aviation battalion, has prepared an overlay showing useable landing areas and their capacities (Figure 3). At this stage in the planning we are assuming that sufficient helicopters are available to move the battle group (-) in one lift.

To develop his plans for seizing Objective X, the commander analyzes the mission, enemy, terrain, and troops available; and begins by designating objectives which must be seized. Objectives may be key terrain features, important man-made objects such as bridges, enemy installations, or terrain areas which will facilitate accomplishment of the mission. In this situation, Objectives 1 and 3 are selected because they are the dominant terrain in the objective area and control dangerous avenues of approach (Figure 4). Objectives 2 and 4 are high ground dominating avenues of approach from the east and west, and control the major road net. To assign units the responsibility for seizure of portions of the objective, boundaries are drawn

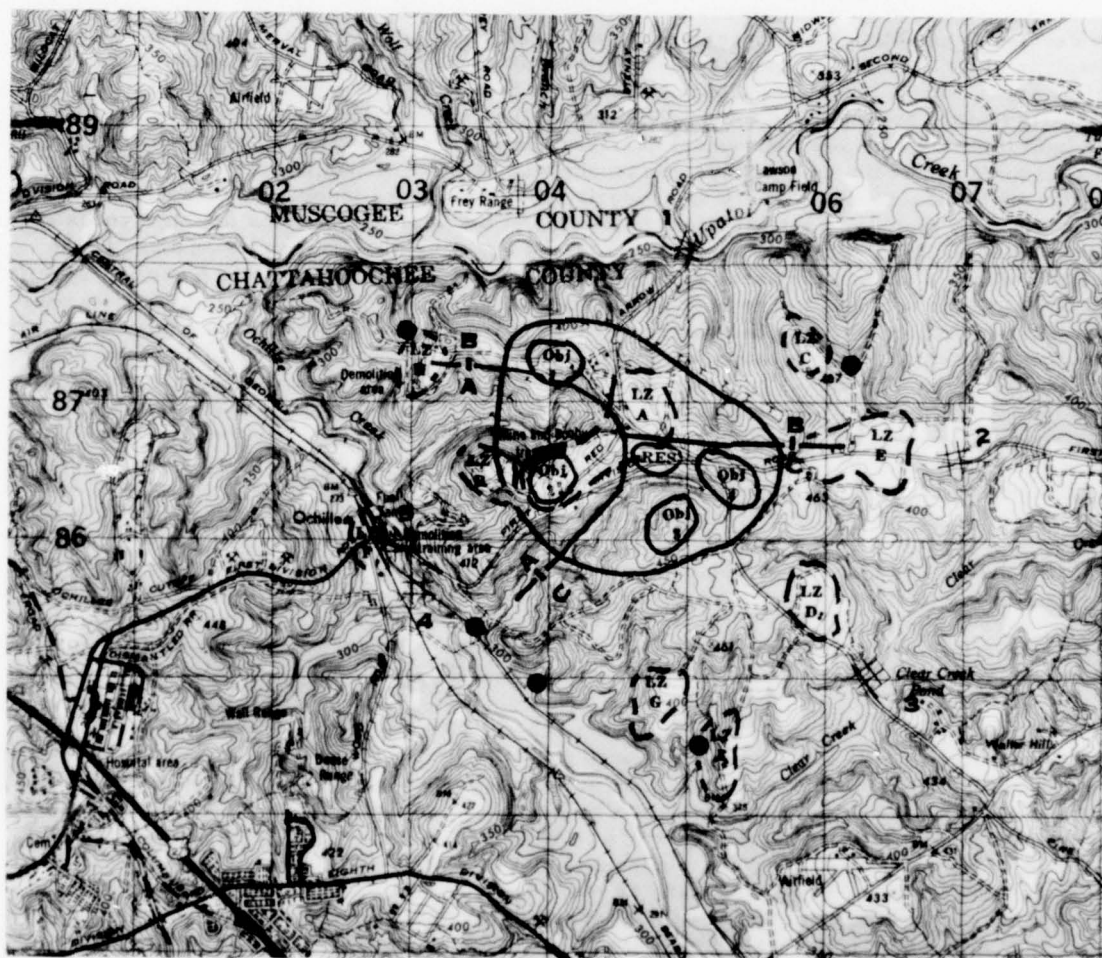


Figure 4. Assault Phase

along recognizable terrain features (Figure 4). Note that these boundaries intersect inside the objective area. This is done to further designate responsibility for clearing enemy from assigned zones, which is an action characteristic of most airmobile operations. The location of the reserve is indicated by the appropriate symbol (Figure 4). The commander indicates the location of the reconnaissance and security position by symbols which are located at specific terrain locations providing good observation over possible enemy avenue of approach. Each dot indicates the exact position where a team of personnel, with communication, will be located (Figure 4). Each roadblock symbol indicates the position where an obstacle will be constructed and covered by fire. Note that the unit boundaries are stopped short of the reconnaissance and security position, indicating that the establishment of the reconnaissance and security position will be under battle group control during the assault. These are the control measures necessary to graphically portray the assault phase of the operation.

We will next discuss missions assigned to subordinate elements of the battle group. Rifle companies are ordered to land in specific landing zones, to seize designated objectives and to clear assigned zones. The heavy mortar platoon (-) is ordered to land within the objective area and is placed in general support with priority of fires to Company A, the company having the most difficult assault mission. The three assault weapon squads are attached one to each rifle company to provide more responsive antitank capabilities. The commander has decided to establish the reconnaissance and security position under his control during the assault to allow the rifle companies adequate assault forces to insure rapid seizure of the objective area. Of the remaining troops available to the commander, the reconnaissance platoon is ideally trained and equipped for employment on the reconnaissance and security position. The light tanks and armored personnel carriers cannot be transported by Army helicopters, but personnel and radio equipped 1/4-ton trucks will be brought into the objective area to form the nucleus for the reconnaissance and security position. If the number of personnel in the reconnaissance platoon is not sufficient to man all of the desired positions on the reconnaissance and security position, teams of personnel from the engineer platoon may be attached to the reconnaissance platoon to assist in manning the reconnaissance and security position. Specifically, these teams of engineers may be employed at those reconnaissance and security positions where roadblocks are to be constructed. In this situation, three squads of engineers are attached to reconnaissance platoon for employment on the reconnaissance and security position, while the engineer platoon (-) remains under battle group control for employment on normal engineer missions within the objective area. Three short range radar teams are attached to rifle companies. Again, the attachment during the assault phase is more than anything a matter of convenience in movement. When the companies have seized their objectives and organized the defense, the radar teams will be emplaced to cover dangerous avenues of approach. The medium range radar team is placed under battle group control to be employed in the vicinity of Objective 2 to cover the important avenue of approach from the west. The battle group reserve is one rifle platoon from Company B. This reserve is small, which is characteristic of most airmobile operations. The magnitude and complexity of assault missions to be accomplished rarely will permit a reserve as large as a company. One or two platoons from companies given the least difficult assault missions is about the largest force that can be held in reserve.

Landing zones are selected to support the scheme of maneuver. It is desirable to land on or adjacent to assigned objectives. It is also desirable to land personnel and equipment inside the proposed FEBA. In this situation there is one large landing zone within the objective area, and other landing zones located outside the proposed FEBA, but immediately adjacent to objectives (Figure 4). The commander may decide to land all of his forces on Landing Zone A, which is within the FEBA, but will require a longer period of time to place all of the battle group on the ground. On the other hand he may elect to use certain landing zones outside of the FEBA, which will permit more rapid landing by the airmobile force, but requires units to attack in convergent directions. The decision was made to land Company A on Landing Zone A and B, Company B on Landing Zone A, and Company C on Landing Zones A and C. Other ele-

ments of the battle group will land on Landing Zone A. The decision to use landing zones outside the FEBA was influenced by the weak enemy situation in the objective area. This weak enemy situation also influenced the commander's decision to land his reconnaissance and support force as close to the reconnaissance and support positions as possible on Landing Zones C, D, E, G, H and I. This decision will enable the battle group security force to establish obstacles and early warning posts before the enemy reacts. In the face of a stronger enemy in the objective area, it might be necessary to land reconnaissance and support forces inside the FEBA with the assault companies; then to move out to the designated reconnaissance and support positions. This offers the advantage of being sure no enemy forces are located between the FEBA and the reconnaissance and support positions. Since the air column will be organized into serials of about 20 aircraft each, with about two minute separation between serials, the same landing zone can be used by several elements. The commander establishes a general priority for introducing elements of the airmobile force into the objective area. Assault companies and fire support elements are given first priority, with companies given the most critical assault mission being landed first. Following in general landing priority will be supporting elements such as engineer and assault weapons, followed by headquarters elements, followed by service elements.

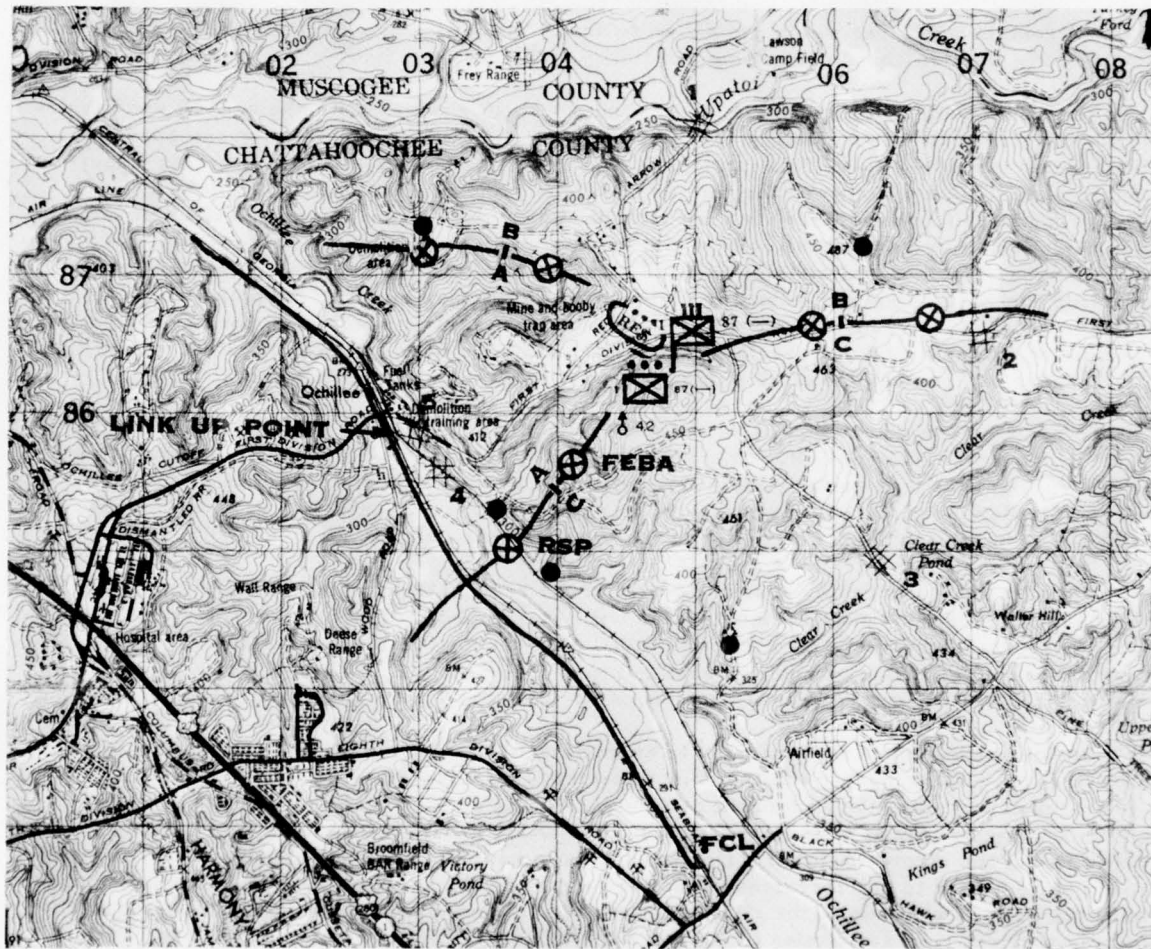


Figure 5. Defense Phase

Now we will discuss the defensive phase of the operation. For academic purposes it is best to discuss the assault and defense phase separately. In actual practice, the planning staff considers both phases concurrently, there being no definite line between assault and defense in the objective area. Let us use the assault portion of the scheme of maneuver just discussed (Figure 4) and develop the defense portion to support it.

We will first consider the graphic representation of the defense portion of the scheme of maneuver. Unit responsibility for defense of the objective area is graphically portrayed by designating boundaries and limiting points (Figure 5). Note that the boundaries are extended to the rear of the FEBA only far enough to give forward companies responsibility for sufficient terrain to occupy positions on the FEBA, and to locate reserve platoons or supplementary positions. The interior portion of the objective area is desirably under battle group control. The boundaries are extended through the reconnaissance and support position and limiting points are designated at the reconnaissance and support position to indicate that rifle companies will man the reconnaissance and support position during the defense. Positions on the reconnaissance and support position which must be manned by rifle company elements are shown by appropriate symbols. To complete the graphic portrayal of the defense, the location of reserves, fire support elements, and command post are indicated by appropriate symbols. Additional control measures which are shown to assist in the linkup with 2d Battle Group, 10th Infantry are the fire coordination line and linkup points (Figure 5).

Now compare Figure 4 and Figure 5. You see that boundaries for the assault and the defense are identical. There will be no redistribution of forces as the battle group goes from the assault to the defense. This is the ideal scheme of maneuver and illustrates an important teaching point--keep the operation plan as simple and uncomplicated as possible. It is not always possible to develop this ideal scheme of maneuver because enemy positions or certain key objectives may require the commander to employ his forces in one posture to seize the objective area, and then redistribute them to defend. For this reason, we present to you graphic methods for portraying both assault and defense. To further simplify the planning, when the scheme of maneuver requires no redistribution of forces, it is possible to portray the entire scheme of maneuver on one overlay (Figure 6). Figure 6 is an example illustrating how the commander can portray his tactical plan on one overlay-type operation order.

To continue our discussion of the defense phase of the operation, the battle group reserve is one platoon from Company B. This one platoon is certainly no more than a blocking force by itself. Because it is unlikely the enemy will attack from several directions simultaneously, the commander plans to take advantage of interior lines of communication to shift forces from unthreatened areas to block or counterattack in areas under attack.

When the rifle companies assume control of the reconnaissance and support position, the reconnaissance platoon and engineer squads will be returned to their normal missions. The reconnaissance platoon will then have the mission of conducting reconnaissance forward of the reconnaissance and support position east and west along First Division Road (Figure 5). The engineer platoon will regroup under control of its platoon leader to perform engineer tasks.

The airmobile force is vulnerable to enemy armored attack because it is not possible to carry heavy antitank weapons to the objective area. To offset this vulnerability, there are several planning steps the commander can use. By his employment of the battle group organic antitank weapons, the assault weapons, the commander influences the overall antitank defense capability of the airmobile force. He may decide to keep the assault weapons under his control, ready to be moved to any threatened area; or he may decide to do as was done in this situation, to attach assault weapons to the rifle companies to cover dangerous avenues of approach. He may also direct rifle companies to employ their organic 106mm recoilless rifles to cover specific avenues of approach in furtherance of the overall plan for antitank defense. In his barrier planning, the commander will direct preparation of additional obstacles to supplement

those on the reconnaissance and security position. The most effective antitank defense is to destroy or disorganize enemy armored units before they are able to reach the objective area and deploy to attack. Tactical air support is the best non-organic means of accomplishing this. During the initial phase of the operation it is desirable to have aircraft on air alert over the objective area. During later stages of the operation, air support is requested on a ground alert status to be called in when an enemy threat appears. If nuclear weapons are available, they are planned for use on possible assembly areas, attack positions, and avenues of approach which enemy armor may use.

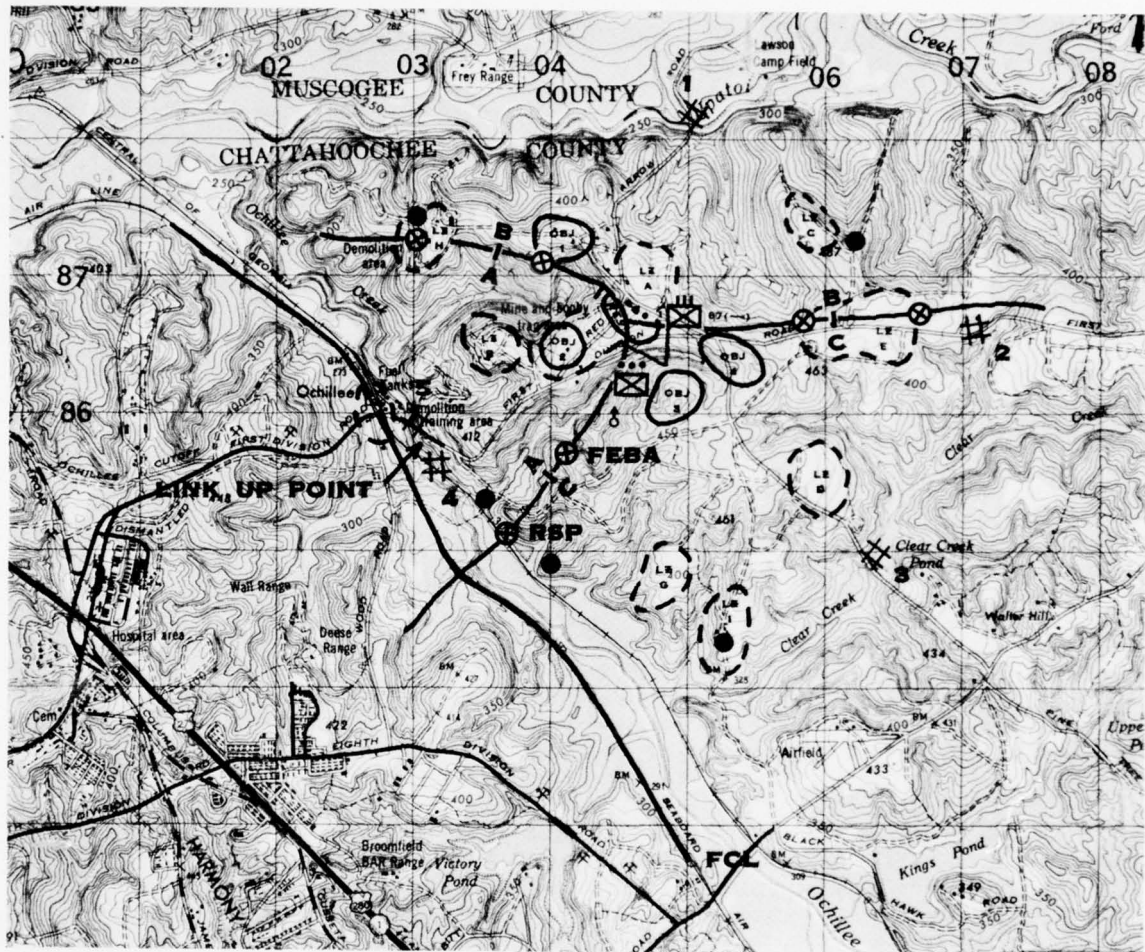


Figure 6. Scheme of Maneuver.

Another problem which faces the battle group is its vulnerability to enemy nuclear attack, by reason of the perimeter-type position. To insure that each individual makes the maximum effort to protect himself, the commander places high priority on preparation of individual entrenchments. He realizes that the best passive protection is dispersion. To gain additional dispersion, he directs that on his order, when rifle companies have completed their assault missions, located defensive positions, coordinated fires across limiting points, and staked out weapons positions, the rifle companies are to move approximately two-thirds of their force to

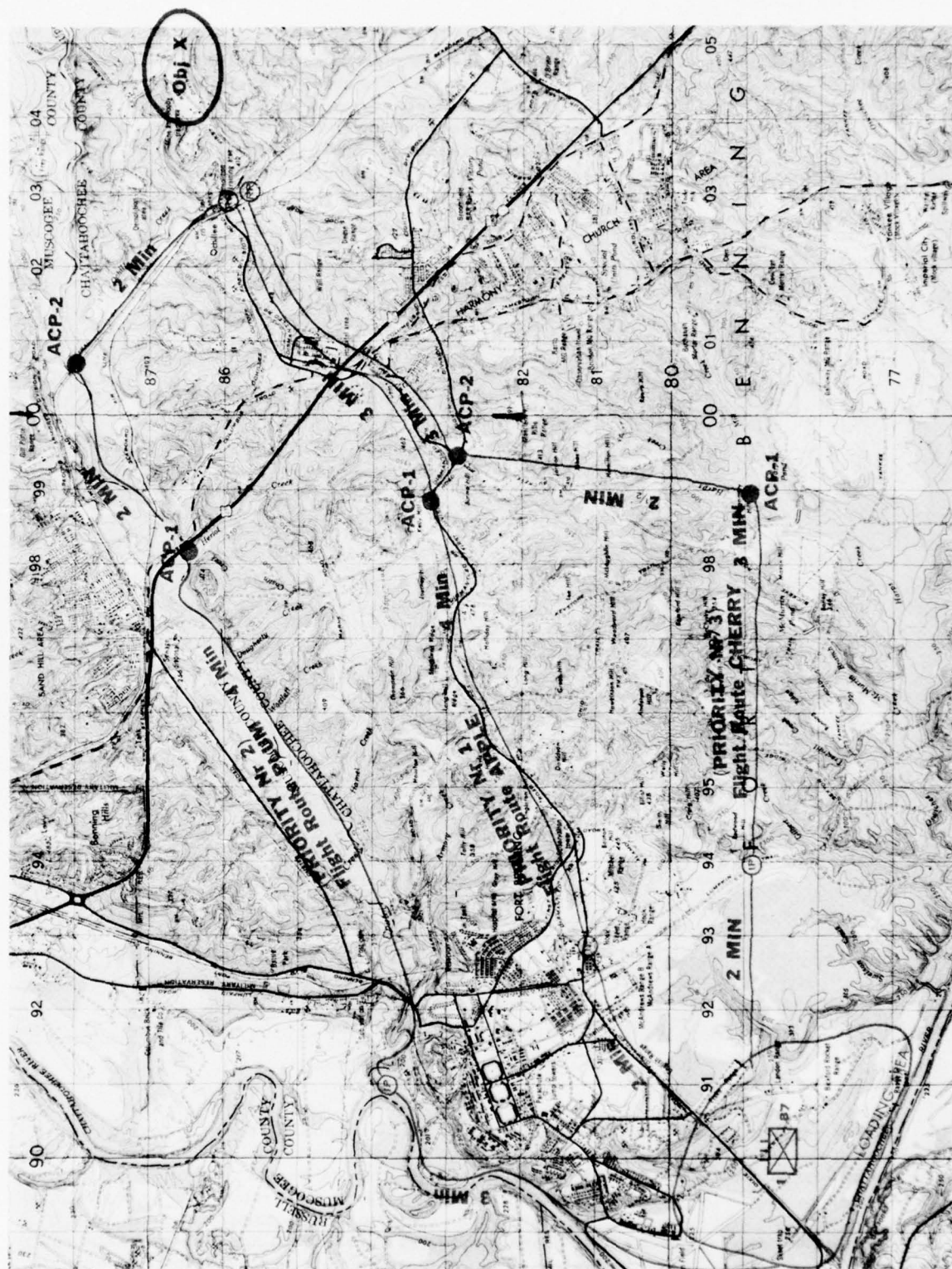


Figure 7. Flight Routes

the reconnaissance and support position. This increased force on the reconnaissance and support position then becomes a delay force which will dig in on the reconnaissance and support position and effect maximum delay back to the FEBA when forced to do so by the enemy. The FEBA is, of course, the ultimate defensive perimeter. Should the enemy withdraw, the rifle company elements will move back out to the reconnaissance and support delay positions. The one-third of the force which remains on the FEBA must work diligently to prepare positions on the FEBA. Again, since it is unlikely that the entire perimeter will fall under enemy attack simultaneously, the commander may leave elements in unthreatened areas in their dispersed positions, even though the delay force is withdrawn in another area. There are other ways to accomplish this dispersion. For instance, if the enemy situation in the objective area is particularly weak, and if the enemy is given a rapid reaction time with respect to employment of nuclear weapons, the airmobile force can land with two-thirds of the force initially on the reconnaissance and support position.

We have discussed some important aspects of planning for the landing and seizure and defense of the objective area. Following the backward planning sequence, we shall discuss the air movement. One of the first steps is to determine the flight routes to be followed. This selection of flight routes is one of the additional responsibilities which airmobile operations bring to the battle group commander. This is in direct contrast to joint airborne operations wherein the transported force tells the troop carrier where they want to go and when they want to land, and the troop carrier then plans the routes, altitude, and speed. Possible flight routes are proposed to the commander by the S2 who works with the aviation battalion staff. Each proposed flight route is given a priority based on ease of navigation. Then it is up to the commander to decide which route or combination of routes best suits the particular mission.

Figure 7 shows three proposed flight routes with priority established by the aviation unit based on ease of navigation. The factors which are considered in selecting a flight route are:

1. Ability of the enemy to detect the movement.
2. Location of enemy forces.
3. Capability of supporting weapons.
4. Restriction on friendly fires.
5. Ease of navigation.

These factors are listed as extracted from field manuals covering airmobile operations. However, the factors are not listed in order of their relative importance. Herein lies the teaching point of this requirement. For each assigned mission, it is necessary for the commander to analyze the situation, establish which factors are of primary importance in this specific mission, and decide which of the proposed flight routes best supports his plan.

Flight Route PLUM is selected for use by 1st Battle Group, 87th Infantry for both approach and return because it follows a well defined course, takes advantage of terrain defilade to reduce enemy observation, avoids enemy positions, and places least restriction on friendly fires (Figure 7). A bonus effect which this route provides is the possibility of deceiving the enemy as to the objective of the airmobile force. Enemy air defense weapons located within range of this route, or any route that is selected for use, must be destroyed or neutralized so that the air column can reach the objective without sustaining unacceptable losses.

Flight Route APPLE is the easiest to navigate, but was rejected because it follows high ground and thus will not hide the air column from enemy observation. It crosses enemy positions and its use will restrict friendly fires supporting 2d Battle Group, 10th Infantry.

Flight Route CHERRY avoids enemy positions, but was rejected because its use will interfere with friendly operations around Objective Y. It also is difficult to navigate and does not take advantage of terrain defilade to deny enemy observation of the air movement.

One flight route was selected for both approach and return; however, the use of multiple routes may be desirable in other situations. If multiple routes are used, control of aircraft and adequate fire support protection are more difficult.

We have discussed the responsibility of the commander of the airmobile force to select the flight route to be used. We also point out that this route must be coordinated with other units over whose zone of operations the route passes. It also must be approved by the headquarters exercising control over the operation--in this case 10th Infantry Division.

For any given mission it will be necessary to tabulate some air movement data. Appropriate field manuals contain examples of formal orders for airmobile operations. Flight route diagrams, air movement tables, and loading tables can all be published as annexes to the operation order if the operation is of such complexity as to require it. We feel that this is unnecessary in most cases. Figure 8 illustrates a method of placing necessary air movement data on one overlay. Data for this overlay is supplied by both the airmobile planning staff and the aviation unit staff. When published, this overlay gives the transporting aviation unit information concerning where and when to load troops, how many aircraft to be loaded by each battle group element, what time to leave the loading area, what route to fly, and where to land. Given this information, the aviation unit can work out remaining details within its own unit. This overlay tells the subordinate elements of the battle group where and when to load, how many aircraft each element will use, the route over which they will be flown, and where and when they will land. Given this information, the battle group units can set up a time schedule to complete their preparations and can complete plans for loading. Published loading tables will seldom be used in airmobile operations, although battle group may require companies to prepare and submit loading tables. It is at the company level, however, that details for loading are worked out, and the principles of tactical loading, such as maintaining integrity of units, separation of key leaders, and insuring that crew and ammunition are on the same aircraft, are applied.

Look at the coordinating instructions on Figure 8 and you see an example of how the air column is organized into serials, much as a truck column is organized. A flight serial is based on a rifle company because between 20 to 25 aircraft is the most we can control properly in a given formation. Within itself, each serial is organized into flight units based on rifle platoons. Upon reaching the release point, the serial breaks up and each flight unit proceeds directly to its assigned landing zone. Note that in the organization of the serials, the general priority for landing, established earlier in our planning, is adhered to. The rifle companies will land first, followed by fire support elements, followed by headquarters elements. Serials are separated by two minutes of time. This enables the battle group to land succeeding elements on the same landing zones.

As you can see, we have presented to you our ideas on simplifying the task of publishing orders with many annexes and appendices. In this example, we have illustrated a method for publishing a complete operation plan on two overlays. Figure 6, a graphic portrayal of the entire scheme of maneuver, with the operation order, makes up one overlay. Figure 8, containing all the movement data, makes up the other overlay. For all but the most complex airmobile operations, we feel that this is all that is necessary. For the least complex airmobile operations, Figure 6 and Figure 8 can be combined and the entire operation order published on one overlay.

The last topic we will discuss today is fire support for airmobile operations. A great deal of planning must be done to provide adequate, immediately responsive fire support for an airmobile force. This planning must be accomplished prior to initiating the mission. Fire support planning is tedious and complex, but must be completed early because once the force begins

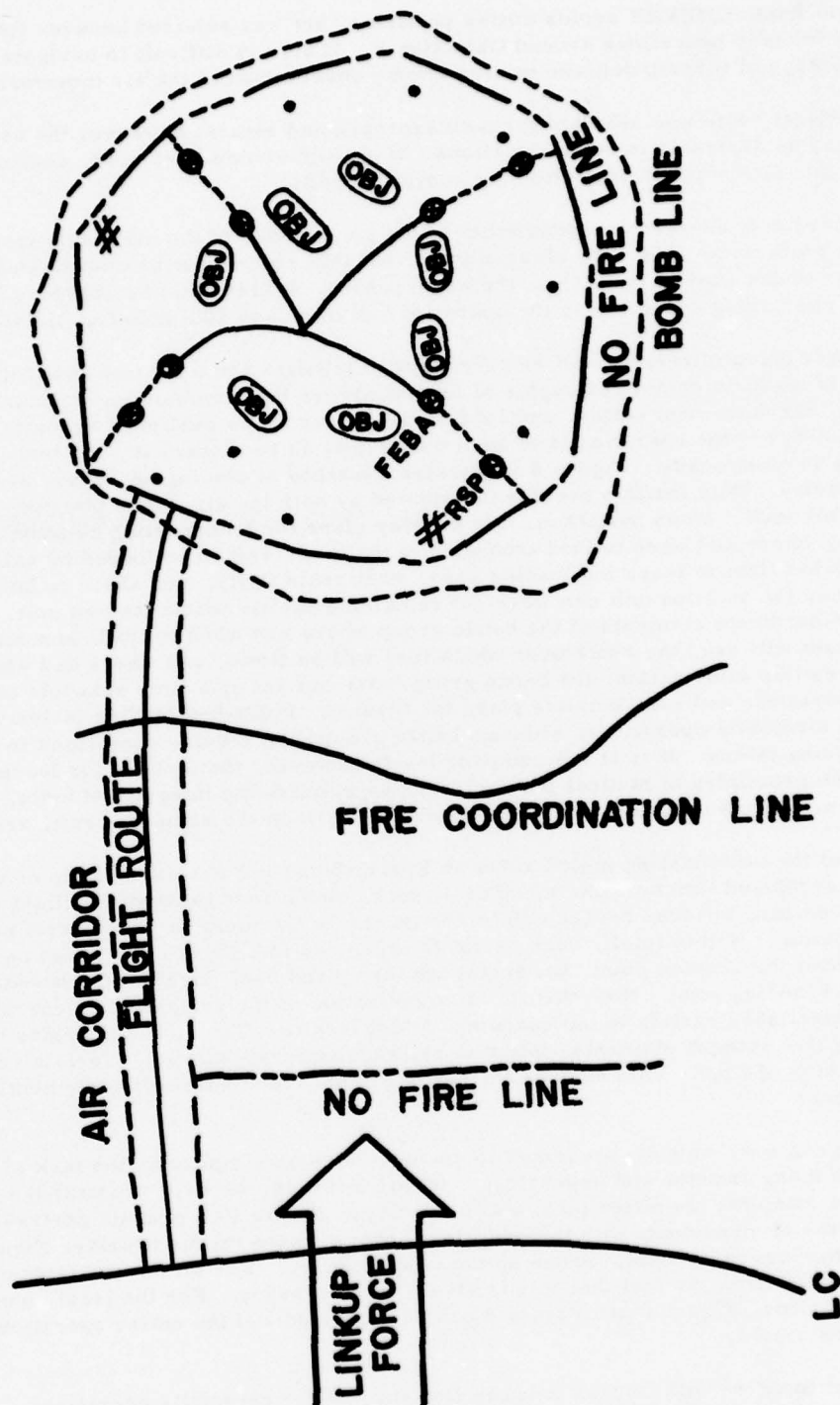


Figure 9. Fire Support Coordination Measures

its assault it is too late to start planning support. Plans must be completed to provide fires for the entire operation. An airmobile operation begins when the air column passes over the line of contact into enemy territory. The operation continues through the assault and defense of the objective area, and is not completed until linkup occurs and the force is no longer by itself in enemy territory.

Perhaps the best way to picture the extent of fire support planning necessary is to sketch out the various phases of the operation. In Figure 9 we have shown schematically: a line of contact, a linkup force attacking on the ground, and an objective area for the airmobile force. The operation begins when the air column passes over the line of contact to follow the prescribed flight route to the objective area. Every means possible must be used to enable the air column to move over enemy terrain to reach the objective area without sustaining unacceptable losses. To accomplish this we call on divisional artillery for primary support. Short range weapons such as 105mm howitzer are employed against close in targets. Larger caliber weapons are employed against deeper targets along the flight routes. At the extreme range of artillery we request air strikes for protection. We may employ armed Army aircraft accompanying the air column to suppress enemy weapons missed by scheduled fires. We will have air observers flying over the air column to call fires on targets of opportunity which may appear. In short we will employ every means at our disposal to destroy, neutralize, or obstruct any enemy troop position, automatic weapons position, or air defense artillery position which might be able to interfere with the movement of the air column. At the same time these same fire support means will be employed against enemy reserve locations, armored units, or other forces which may be used in initial reaction against the airmobile attack. To coordinate fire support along the flight route, an air corridor is drawn giving adequate air space on either side of the flight route to enclose the aircraft formation (Figure 9). During specified periods of time when aircraft are operating, all fires which fall within this air corridor are approved by the fire support coordinator having overall responsibility to control fires supporting the air movement. In our problem, this would be the division fire support coordinator.

Having planned fire support to insure the safe arrival of the air column, we turn our attention to fire support requirements for the objective area. First we must decide whether or not preparatory fires must be planned in the objective area. In this problem, the enemy situation does not require the firing of a preparation in advance of the landing, and we hope to gain tactical surprise by withholding preparatory fires. Next we consider providing fires to support the landing and seizure of objectives (Figure 9). When the company commander or his forward observer calls for a certain concentration, he does not care whether it comes from an 8-inch howitzer from behind the line of contact or from a 4.2-inch mortar which has set up in the objective area. He merely wants fire support and he wants it fast. This is why planning must be accomplished before the operation begins. With the assault completed, and the battle group digging in to defend, all normal considerations of defensive fire support are applicable. For instance, long range defensive fires must be planned on possible enemy avenues of approach, assembly positions, and attack positions. Close-in defensive fires must be planned to protect the reconnaissance and support position and the FEBA. Final protective fires and fires on the FEBA and within the objective area must be planned. All this is considered prior to undertaking the operation. During this planning, the commander's guidance includes which units are to receive priority of fires, and the general location of barrages available to the battle group.

The airmobile operation is still not concluded until linkup is effected. Fire support means available to the airmobile force will be planned for employment along the linkup force axis of advance and around the designated linkup points. The problem that faces us here is one of coordination to insure that as the linkup force approaches, each force uses its available fire support means to assist the other force, but not to cause damage to each other. The control measures we use to coordinate fires during linkup operations are shown on Figure 9. First we have a No Fire Line. This is a line drawn between specific grid coordinates, and is used to control indirect fires. It will appear only on fire direction center fire control maps. Each

force establishes its own No Fire Line a sufficient distance in front of its troops to preclude their injury by fires falling outside the line. The No Fire Line in front of the linkup force will move as the attack progresses until eventually the two lines merge and one mutual No Fire Line encloses the two forces. Essentially, what the No Fire Line means is that no fires, including effects of nuclear weapons, will fall within the area enclosed by that No Fire Line unless they are approved by the fire support coordinator with the force that established the line. Another control measure used is a Bomb Line, used to control air strikes. The Bomb Line is established generally around the reconnaissance and support position. It is drawn along recognizable terrain features such as rivers, roads, and railroads because pilots must be able to identify it from the air. The way the Bomb Line is used to control air strikes is that once established, no air strikes can be called in on the area enclosed by the Bomb Line unless they are approved and controlled by the forward air controller with the force that established the Bomb Line. The third control measure we use is a Fire Coordination Line, which is used to control both direct and indirect fires. The Fire Coordination Line is established along recognizable terrain features, generally close to the airmobile force. The Fire Coordination Line will be shown on operation overlays (Figure 2 and Figure 5) because individual gunners must be briefed on its location. It will become effective at a specified time when the linkup force has approached close enough that the two forces can exchange direct fires. What it means is that, once effective, a gunner on one side of the Fire Coordination Line cannot engage a target on the other side of the line without insuring through communication that the target is not part of the other force.

This is a quick discussion of the requirement to plan fire support for all phases of the operation. Again, we point out the importance of prior planning, and we emphasize that whatever time the commander can spare to insure the completeness of his fire support plans is well worth the effort.

In conclusion, let me again call your attention to the two types of airmobile missions we discussed today. One is a more immediate type mission requiring a unit to land in enemy territory to accomplish a tactical mission and then to move on to some other location for further operations. We used a very simple combination of control measures to portray our plan for this mission. Then we discussed another type of mission requiring a force to land, seize key terrain, and defend it to deny the enemy its use. In this instance we developed plans for seizure of the objective and for the subsequent perimeter defense. These are only two of many types of missions which may be assigned to an airmobile force. We feel that your understanding of the techniques and principles which we presented in discussing these two types of missions will enable you to successfully plan any other type of airmobile mission. Throughout our planning in today's problem we had to recognize certain limitations placed on us by reason of the availability and carrying capacity of our transport helicopters. We fully expect the next few years to bring us better air vehicles as well as possible changes in unit organization and equipment. Regardless of these changes, we feel that the techniques and the principles presented to you today will remain useable.

The real challenge to all of us is to develop better and simpler ways to use these air vehicles that are ours to use. We are seeking better techniques to enable us to realize our goal of making airmobile operations a part of our everyday combat operations. We therefore welcome any ideas that you may have to help us develop better and more flexible doctrines.

Section IV. UNCONVENTIONAL WARFARE

MAJOR ROBERT L. PHILLIPS

Instructor, Fundamentals, Review and Doctrine Section, Command and Staff Department.

See Infantry Instructors' Conference Report (Classified Annex)

Section V. ORGANIZATION AND EMPLOYMENT OF DAVY CROCKETT PLATOON

CAPTAIN WILLIAM J. CUMMINGS

Instructor, Fundamentals, Review and Doctrine Section, Command and Staff Department

See Infantry Instructors' Conference Report (Classified Annex)

CHAPTER 3

WEAPONS DEPARTMENT PRESENTATION

Section I. M1 RIFLE, AUTOMATIC RIFLE, M14 RIFLE, CAL.45 PISTOL, ANTITANK RIFLE
GRENADE, AND M4 INCENDIARY BURSTER.

CAPTAIN HARRY A. YODER, JR.

Instructor, Small Arms Committee, Weapons Department

FIRST LIEUTENANT THOMAS C. DELAHUNTY

Instructor, Small Arms Committee, Weapons Department

This afternoon personnel of the Weapons Department will discuss and demonstrate the weapons of the battle group.

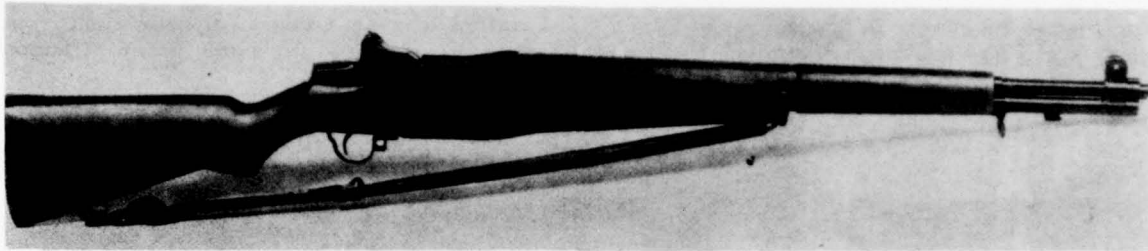


Figure 1. Rifle, Caliber .30, M1.

The first weapon to be demonstrated is the M1 rifle, caliber .30 (Figure 1). It is the basic arm of the Infantry and the weapon used by the individual rifleman to accomplish his mission of closing with, capturing or destroying the enemy. This rifle weighs 10 1/2 pounds combat loaded and is fed from a clip containing eight rounds. It fires semi-automatic fire only. There are 918 M1 rifles in the battle group.

To demonstrate the accuracy and rate of fire of the M1 rifle in the hands of a well trained rifleman, Sergeant John W. Hough from New York will fire at the target labeled M1 on the panel 25 meters to his front. This is comparable to firing a 30-centimeter bull's-eye at 135 meters. Sergeant Hough will attempt to fire 40 rounds of aimed fire in 60 seconds. (In the demonstration Sergeant Hough fired 40 rounds in 57 seconds.)

The demonstrator's rate of fire was much faster than the normal cadence for sustained fire. In the present Known Distance Course, the firer is allowed 50 seconds to assume his position and fire 9 rounds.

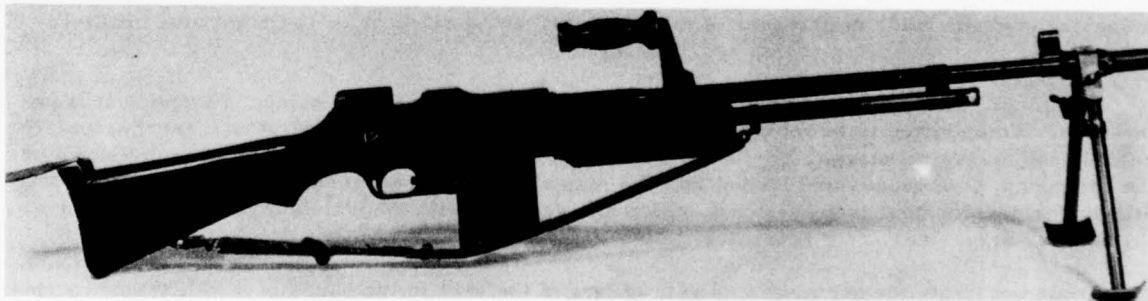


Figure 2. Rifle, Automatic, Caliber .30, M1918A2.

The maximum effective range of the M1 rifle in the hands of the average soldier is 460 meters. To demonstrate the M1 firing at approximately the maximum effective range, Sergeant William R. Cox from North Carolina will fire at the line of silhouettes between Panels #3 and #4 at a range of 360 meters. (Demonstration fired.)

In addition to the riflemen, each 11-man squad contain two automatic riflemen armed with the Browning Automatic Rifle, caliber .30 (Figure 2). Their job is to furnish the close fire support necessary to assist the riflemen of the squad in closing with the enemy. The BAR is presently the only automatic weapon in the rifle squad. This rifle weighs 21 pounds combat loaded and is fed from a magazine containing 20 rounds. By use of the change lever the automatic rifleman is able to fire at a slow cyclic rate of 350 rounds per minute or a fast cyclic rate of 550 rounds per minute. There are 110 automatic rifles in the battle group.

To demonstrate its accuracy and rates of fire, Sergeant First Class Lee O. Breeland from Mississippi will fire one magazine in short bursts at the group of silhouettes in the vicinity of Panel #2 at a range of 360 meters. He will then fire one magazine in one burst on the slow cyclic rate at the bunker in the vicinity of Panel #3. Finally, Sergeant Gilbert L. Wainwright from Florida will fire one magazine in one burst on the fast cyclic setting at the same target. (Demonstration fired.)

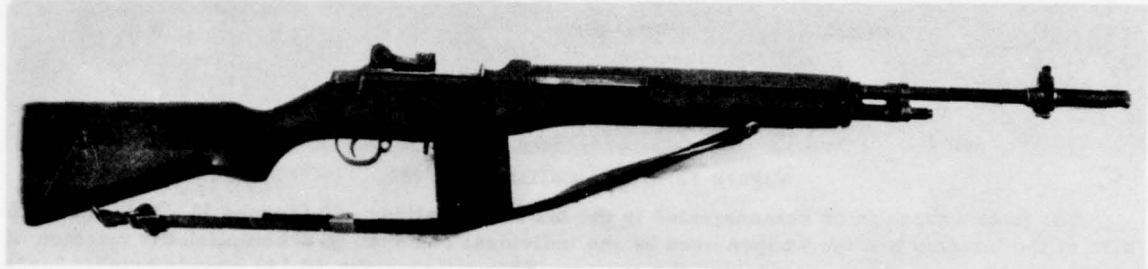


Figure 3. Rifle, 7.62mm, M14.

On 1 May 1957, the Army announced the adoption of a new rifle which was developed by Army Ordnance to replace the M1 rifle, the Browning automatic rifle, the carbine and the sub-machinegun. This new rifle, the M14 (Figure 3), fires the 7.62mm NATO round. The NATO round, which has been designated the M59, is 1/2 inch shorter and 12 percent lighter than our present rifle ammunition. Essentially, it is equal in performance to the M2 round which was used in World War II and Korea; but it offers a savings in weight, not only in the round itself but also in the containers, due to their lesser bulk. This will have a definite effect on logistics and an appreciable effect on the combat load of the Infantryman.

The M14 rifle weighs approximately 10 pounds combat loaded and is fed from a magazine containing 20 rounds. It features a flash suppressor on the muzzle, improved gas action, a magazine charger guide on the rear of the receiver, and a selector on the right side of the receiver.

The magazine charger guide permits the reloading of a magazine without removing it from the rifle. Ammunition is temporarily issued in five-round expendable magazine chargers. To reload, the magazine charger is placed in the magazine charger guide; and by pressing down on the top round, five rounds are loaded into the magazine. The charger may then be discarded. Still under development is a 10-round expendable charger with the ultimate goal, a 20-round throw away magazine.

To demonstrate the accuracy and rate of fire of the M14 in the hands of a well trained rifleman, Sergeant Hough will fire at the target labeled "M14," 25 meters to his front. He will

attempt to fire 40 rounds of aimed fire in 50 seconds. (In the demonstration Sergeant Hough fired 40 rounds in 40 seconds.) With a cyclic rate of fire of 750 rounds per minute and its 20-round magazine, the M14 can attain a much faster sustained rate of fire than the M1.

The maximum effective range of the M14 is the same as the M1 Rifle, 460 meters.

To demonstrate the M14 Rifle firing at approximately the maximum effective range, Sergeant Cox will fire at the line of silhouettes between Panels #3 and #4 at a range of 360 meters. (Demonstrator fires eight rounds.)

The addition of the selector to the M14 gives it the capability of firing fully automatic fire. To demonstrate it firing in this capacity, Sergeant Hough will engage the line of silhouettes to his direct front at a range of 35 meters. He will fire one magazine in short bursts from the under-arm firing position. (Demonstration fired.)

To demonstrate the extremely fast cyclic rate of fire of the M14, Sergeant Cox will fire one magazine in one burst at the same target. (Demonstration fired.)

This concludes the first portion of the Small Arms Committee demonstration. Lieutenant Delahunty will now discuss special purpose weapons.

The combat role of today's versatile Infantryman demands the ultimate in weapons designed to increase his chances for success and survival on a nuclear battlefield. Constant improvement of existing weapons together with the continuous development of new weapons is essential to provide the Infantry soldier with the means to reduce any obstacle he may encounter. For in addition to his basic weapon, the Infantryman will often require special weapons in order to overcome particular situations he encounters during his advance to the objective, in the accomplishment of his mission, or in repelling enemy attacks of vastly superior numbers.

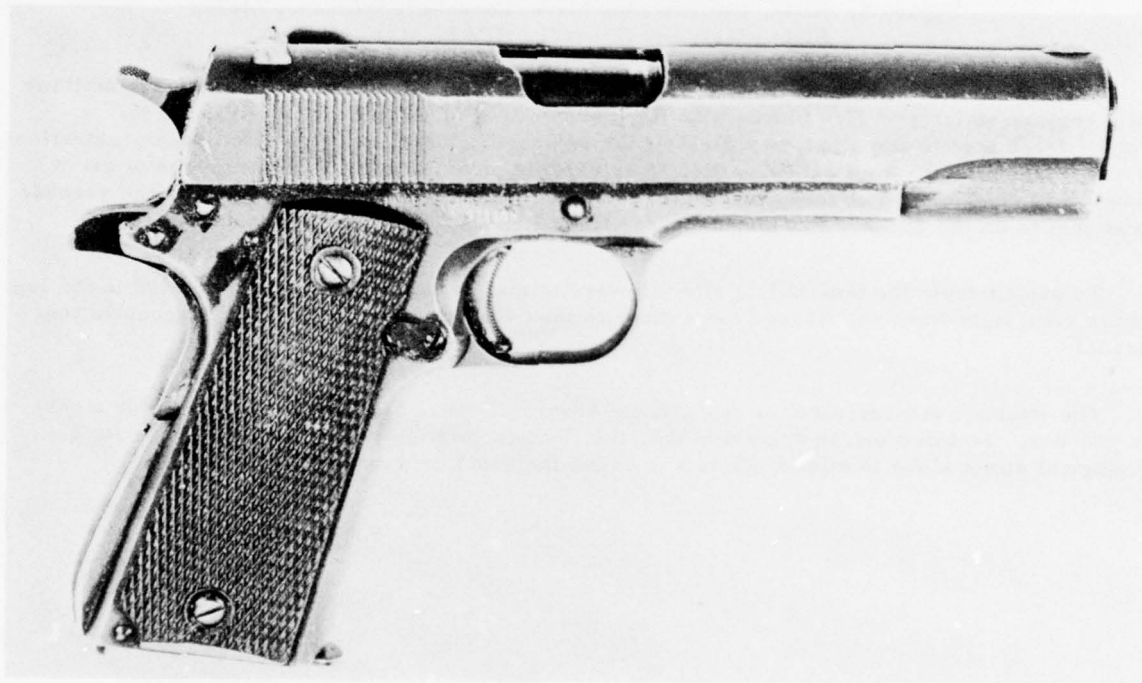


Figure 4. Pistol, Caliber .45, M1911A1.

To provide the Infantry soldier with the necessary assistance to successfully cope with these special situations, weapons are available particularly adapted to close-in fighting, engaging enemy armor, driving the enemy from fortified positions, and disrupting enemy attacks.

The first of these weapons is the automatic pistol, caliber .45 (Figure 4), which is used for close-in self defense by individuals having another primary weapon, having command duties, or by individuals who carry heavy equipment, such as ammunition for crew-served weapons. The pistol weighs 2 1/2 pounds and is fed from a magazine containing seven rounds. There are 188 pistols in the current battle group.

To demonstrate the accuracy of this weapon at close ranges, Sergeant First Class Charles S. Elledge from Tennessee will fire at the double clay pigeons suspended on the axe to his front. He will attempt to split the bullet on the sharp edge of the axe, breaking both clay pigeons with one shot. (In the firing demonstration both clay pigeons were broken with one shot.)

As the pistol is employed primarily for close-in defensive protection Sergeant Elledge will demonstrate this capability by engaging the silhouette targets to his front. He will use rapid fire as this would normally be employed in such a situation. (Demonstration fired.)

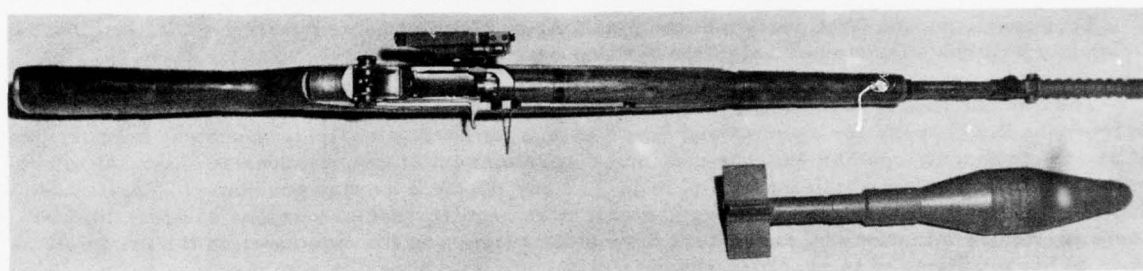


Figure 5. Rifle, Caliber .30, M1 w/Launcher, Grenade, M7A3; Sight, M15; and Grenade, HEAT, M31.

For mounting on the M1 rifle by means of a grenade launcher is the high explosive antitank rifle grenade which provides close-in antitank protection for the rifle squad (Figure 5). It weighs 1 1/2 pounds and employs a high explosive shaped charge to obtain maximum penetration at any range at which a hit can be made. It is capable of penetrating 25 centimeters of armor plate or 50 centimeters of reinforced concrete. The hollow stabilizer tube permits the grenade to be placed on the grenade launcher, and the fin assembly provides stability in flight.

To demonstrate the tank killing effectiveness of this grenade, a grenadier located in the log bay to your right front will engage the silhouette tank 40 meters to his front. (Demonstration fired.)

The weapons demonstrated so far will not always dislodge the enemy if he occupies a cave or pill-box. To kill him, or drive him out, the flamethrower is an effective weapon. Its psychological effect alone is often sufficient to cause the death or surrender of an enemy.



Figure 6. Flamethrower, Portable, M2A1-7.

The standard portable flamethrower is shown in Figure 6. When filled and charged ready for firing, it weighs approximately 70 pounds. It consists of two groups: a tank group and a gun group.

The tank group holds a total of five gallons of fuel together with the propellant gas of air or nitrogen, under high pressure.

The gun group provides a means of igniting the stream of fuel and directing it to the target.

Two types of fuel are used with the flamethrower; unthickened and thickened. Unthickened fuel is a mixture of gasoline with fuel oil, diesel oil, or kerosene. It has a maximum range of 20 meters and is characterized by a large billowing flame which envelops the target seeking out small openings. The temperature of this flame reaches 2600 degrees Fahrenheit. (Flame gunners fire demonstration using unthickened fuel.)

Thickened fuel is a mixture of gasoline with US Army fuel thickener, napalm. It has a maximum range of 45 meters and is characterized by a long, thin, rod-like stream of burning fuel which may be directed at small openings such as pillbox windows and apertures. The burning fuel will stick to and build up on the target, burning from two to six minutes and reaching a temperature of 2400 degrees Fahrenheit. (Flame gunners fire demonstration using thickened fuel.)



Figure 7. Burster, Incendiary, M4.

The use of flame as a means to assist the Infantryman in repelling enemy attacks has long been recognized as extremely effective. The M4 incendiary burster (Figure 7), recently standardized for use by the US Army, satisfies the long existing requirement for a device capable of igniting and disbursing thickened fuel over a large area. The M4 burster weighs approximately 2 1/4 pounds and is made up primarily of two concentric tubes. The inner tube contains the explosive charge, tetryl, while the space between the inner and outer tube is filled with a pyrotechnic ignition mixture.

The M4 burster is so constructed that two or more can be coupled together in series. They may be fired either electrically or mechanically, by fuze, blasting cap, or any standard firing device. The burster may be used in any size container from a five-gallon can to a 55-gallon drum. For most efficient dispersion of the fuel, one burster is used in a five-gallon container and three in a 55-gallon drum. There are 60 M4 incendiary bursters included in the basic load of ammunition of the battle group.

That concludes the Small Arms Committee's portion of the demonstration. Captain Spinks of the Machinegun Committee will next discuss the machineguns available in the battle group to support the Infantryman in the attack and defense.

Section II. MACHINEGUNS (CALIBER .30, CALIBER .50, 7.62MM)

CAPTAIN RAYMOND F. SPINKS

Instructor, Machinegun Committee, Weapons Department

The Browning machinegun, caliber .30 (Figure 1), is organic to the Infantry rifle company; and its big brother, the caliber .50, is available to the rifle company through the attachment of armored personnel carriers.

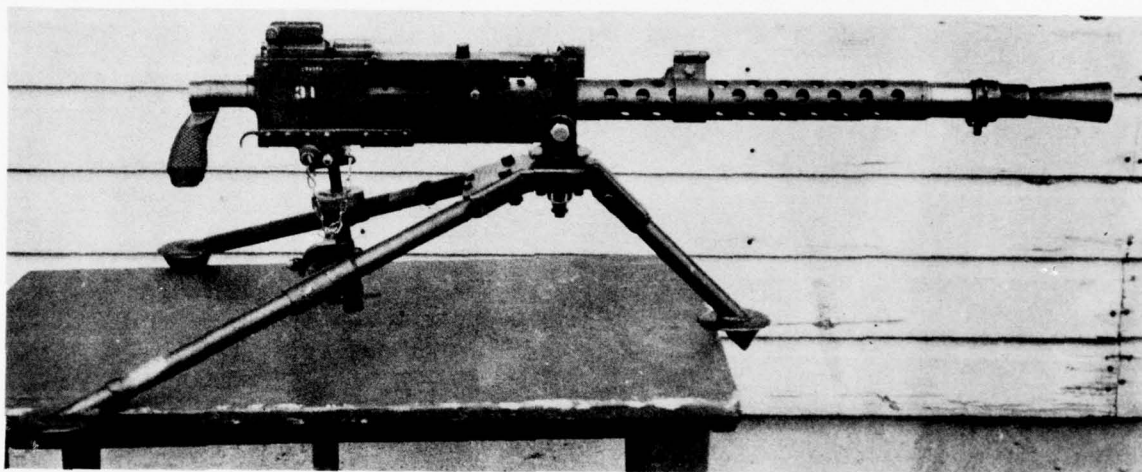


Figure 1. Machinegun, Caliber .30, M1919A6, on Tripod, M2.

Both guns were perfected by John M. Browning, from the development of the first true machinegun by another American, Hiram Maxim. These guns are capable of delivering automatic, flat-trajectory fire for extended periods of time and strike lethally at enemy Infantry and crew-served weapons.

We shall fire several demonstrations to show you the characteristics and capabilities of these guns.

Our squad leader is Master Sergeant Gerald Wright from Florida; our gunners are Sergeant First Class Donald F. McClung from Kentucky and Sergeant Joseph Broderway from Kentucky.

Machineguns may be employed singly or in pairs; however, when the situation permits, we strive to employ our guns in pairs, that is, by assigning two guns to a single target. Both guns fire alternately, thus insuring a continuous volume of fire on the target. Using this technique, it is possible for us to effectively neutralize enemy positions while our friendly troops attack.

Defensively, in the front line platoons, the machineguns are emplaced where they can best destroy and disrupt enemy formations attacking our own positions.

A pair of machineguns is found in the weapons squad of each rifle platoon. Each gun is equipped with a bipod and a tripod mount.

We shall demonstrate the engagement of a target by a pair of caliber .30 machineguns on tripod. On this mount the gun has great ability and is well suited for defensive roles. To take full advantage of the killing effects of ricochets, we place the center of impact at the base of the target. Our crews will engage the line of enemy riflemen extending from Panel #4 left to and including the bunker. (Demonstration fired.)

During that firing, the squad leader wanted to concentrate more fire on the bunker. He therefore directed the Number 2 gun crew to concentrate its fire on the aperture of the bunker. He then signaled the Number 1 gun crew to cover the remainder of the target. This demonstrates very clearly the versatility which the squad leader has in engaging combat targets.

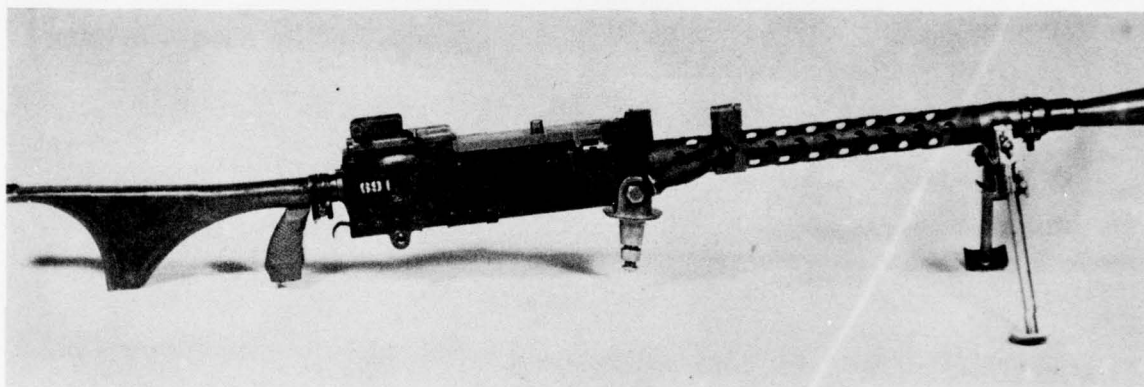


Figure 2. Machinegun, Caliber .30, M1919A6 on Bipod.

The Browning machinegun, caliber .30, weighs 33 pounds when mounted on the bipod (Figure 2), and can be carried forward in the attack by one man to provide close, continuous fire support for the riflemen. When the bipod mount is used, the gunner's body provides the stability which is inherent in the tripod mount.

We shall have a pair of caliber .30 machineguns on bipod take under fire the enemy column approaching from the right of Panels #3 and #7. (Demonstration fired.)

The caliber .30 machinegun can be fired from the hip. This method can be effective during the final stages of the assault or in meeting emergencies when the troops are on the move and the enemy is encountered at close ranges. It is also possible to engage descending parachutists during an enemy airborne assault. I wish to point out that this is a type of fire which can be delivered effectively only by experienced gunners. To show what well-trained gunners can do, Sergeant McClung and Sergeant Broderway will engage ground and aerial targets by firing a pair of machineguns from the hip. (Demonstration fired.)

Although the caliber .50 machinegun (Figure 3) is not organic to the rifle company, its role is an important one. This gun is mounted on the armored personnel carriers which may be attached to the Infantry battle group to provide transportation for tactical moves. Therefore, it is imperative that we in the Infantry have a thorough knowledge of its characteristics and capabilities.



Figure 3. Machinegun, Caliber .50, M2, on Tripod, M3.

The caliber .50 machinegun fires a large bullet with great accuracy either singly or in bursts of fire. It is used effectively against long-range point targets such as gun positions or lightly armored vehicles. It may also be employed against low, slow flying aircraft.

To demonstrate its firepower, our gunner will engage the tank to the left of Panel #7. Initially the firing will be single shot; then Sergeant McClung will build up his fire to fully automatic.

When this gun is fired automatically, the rear legs of the tripod have a tendency to dig into the ground, making it necessary for the gunner to continually make adjustments in elevation in order to keep effective fire on the target. (Demonstration fired.)

The Army has adopted a new machinegun. It is called the machinegun, 7.62mm, M60 (Figure 4). The M60 is air-cooled, belt-fed, and gas-operated. It has a cyclic rate of fire of 550 rounds per minute. The maximum effective range is considered to be 1100 meters, in that accurate fire adjustment at greater ranges is extremely difficult.

The M60 machinegun in Figure 4 is shown on the M122 mount which has been adopted as the standard tripod for this weapon.

The M122 mount weighs 17 pounds and permits the M60 to be employed in the predetermined fire role.

This is the same mount that is presently used with the Browning machinegun, caliber .30, with minor modifications. By modifying and using existing equipment rather than producing a new mount, the Army saved several million dollars.

The M60 affords us several advantages over the Browning machinegun. The first of these is weight reduction. The M60 is 10 pounds lighter than the caliber .30 machinegun. Excluding the tripod mount, the M60 weighs only 23 pounds. Because of its gas operation, the M60 is made largely of metal stampings. Not only is it easier to produce, but it is estimated that it

can be mass produced for approximately one-half the cost of the Browning, caliber .30, machinegun.



Figure 4. Machinegun, 7.62mm, M60 on Tripod, M122.

A second advantage is the quick change barrel. A barrel can be changed and the gunner can resume firing within a matter of seconds. In order for the gunner to change barrels, he raises the barrel locking lever and has the assistant gunner remove the barrel group. The barrel group weighs approximately eight pounds and features a flash suppressor, fixed front sight and a bipod assembly with adjustable legs. The gas piston is located within this portion of the gas cylinder system. The barrel group is considered to be a spare part for the gun. The quick change barrel allows us to maintain a continuous volume of fire on the enemy almost indefinitely.

To demonstrate this, our gun crews will engage the silhouette targets in the vicinity of Panel #2 by firing a pair of M60's on the tripod. You will notice that the assistant gunner on the Number 1 gun has in his possession a spare barrel. During the firing this gun crew will change barrels. Note that the squad leader signals the Number 2 gun crew to increase its rate of fire during the barrel change. He does this in order to maintain a continuous volume of fire on the enemy. (Demonstration fired.)

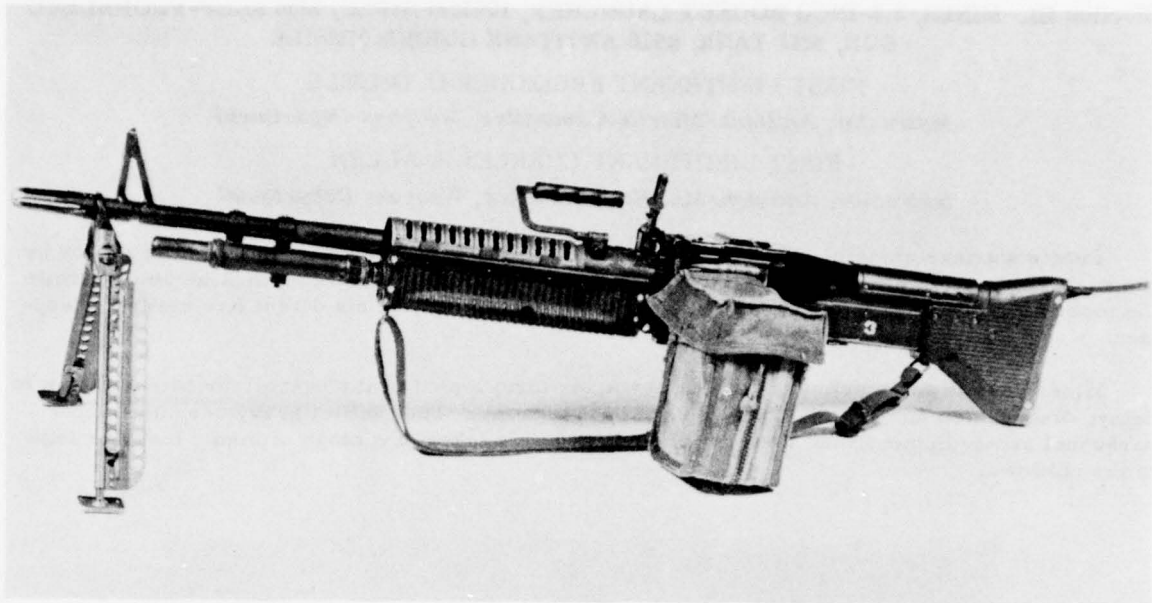


Figure 5. Machinegun, 7.62mm, M60 w/Canvas Magazine and Bipod.

The M60 can be equipped with a canvas magazine (Figure 5) that will house 100 rounds of linked ammunition. This canvas magazine allows the gunner freedom of movement and flexibility in engaging targets since he can move without an assistant gunner. To demonstrate this, our gunners will engage the enemy on the wide mound to your front, firing first from the shoulder, then from the hip. Then both guns will engage the enemy in the vicinity of Panel #2 by firing from the prone. (Demonstration fired.)

Although slower rates of fire with the light machinegun are usually sufficient for neutralizing enemy targets, the maximum or cyclic rate of fire can be used to cover a target in the shortest possible time. (At this point, a humorous skit involving firing of machineguns was presented.)

This concludes the Machinegun Committee demonstration. Lieutenant DeLisle will now discuss antitank weapons.

Section III. MINES, 3.5-INCH ROCKET LAUNCHER, 106MM RIFLE, M56 SELF-PROPELLED GUN, M41 TANK, SS10 ANTITANK GUIDED MISSILE

FIRST LIEUTENANT FREDERICK C. DeLISLE

Instructor, Antitank/Missile Committee, Weapons Department

FIRST LIEUTENANT CHARLES B. ALLEN

Instructor, Antitank/Missile Committee, Weapons Department

Future warfare envisions wide gaps between friendly forces and extensive use of armor by the enemy. To fight effectively on the modern battlefield the Infantryman must be able to limit the mobility of his enemy and canalize him into the killing zone of his direct fire antitank weapons.

Mines used in their primary role as obstacles form a part of the overall coordinated plan to delay, disorganize and canalize the advance of the enemy. They inflict heavy casualties upon personnel and equipment, and their psychological effect takes advantage of man's inherent fear of the unknown.



Figure 1. Mine, Antitank, M15.

Current standard antitank mines immobilize armor primarily by breaking tracks and road wheels. The medium antitank mine (Figure 1) weighs 20 pounds and contains 12 pounds of TNT. It will detonate under a pressure of 350-500 pounds and is sufficient to immobilize light and medium armor. If you direct your attention to your right front, near Panel "F", we will demonstrate the explosive force of the medium antitank mine. (Demonstration fired).

The heavy antitank mine (Figure 2) weighs 30 pounds and contains 22 pounds of composition "B" explosive. It will detonate under a pressure of 350-500 pounds and is sufficient to immobilize the heaviest known tank. Again if you will direct your attention to the vicinity of Panel "F", we will demonstrate the explosive force of the heavy antitank mine. (Demonstration fired).

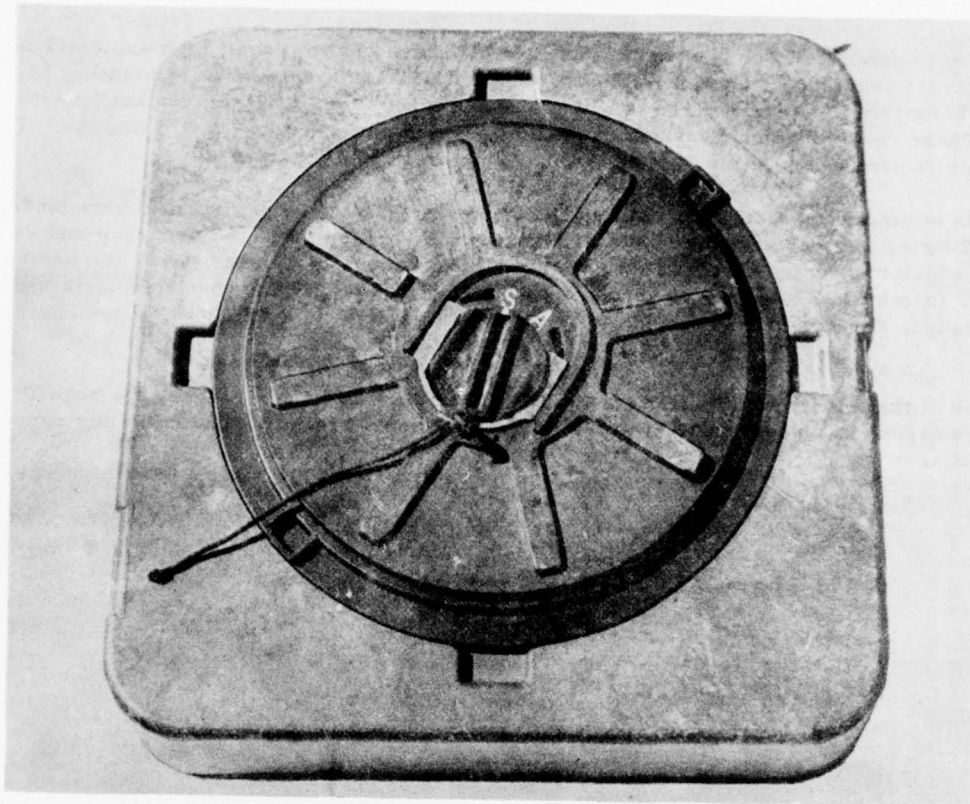


Figure 2. Mine, Antitank, Nonmetallic, M19.

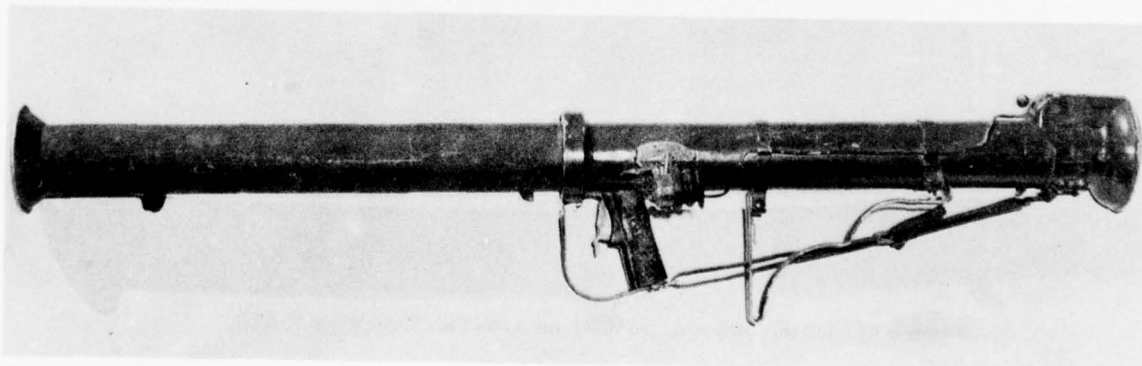


Figure 3. Launcher, Rocket, 3.5-Inch, M20A1B1.

After forcing the enemy onto the battlefield of our choosing, the Infantryman brings to bear his direct fire antitank weapons to destroy the enemy's armor. The first antitank weapon we will discuss is the 3.5-inch rocket launcher (Figure 3).

The rocket launcher is the rifle platoon's primary antitank weapon and has the mission of providing close-in antitank defense.

There are seven 3.5-inch rocket launchers in the rifle company and 54 in the battle group. The launcher weighs only 13 pounds, making it an extremely lightweight, versatile weapon capable of being carried forward in the attack or used by patrols engaged in tank killer operations.

Standard ammunition for the rocket launcher is issued in two types: high explosive antitank and target practice. The high explosive antitank rocket is capable of penetrating 13.7 inches of homogeneous armor. The target practice rocket is used to train rocket launcher crews. These rockets weigh 9 pounds each and have a maximum range of 825 meters. The maximum effective range of the 3.5-inch rocket launcher is 275 meters.

Due to an improved method of igniting the rocket, the latest model of the rocket launcher is capable of firing 12 to 18 aimed rockets per minute. To demonstrate the accuracy and volume of fire of which the weapon is capable when in the hands of a well-trained crew, the demonstration crew, located in the bunker to your front, will engage the tank between Panels #2 and #3 and the troops, represented by silhouette targets, in the vicinity of Panel #2. (Demonstration fired.)

To fulfill the Infantryman's need for antitank protection at longer ranges, the recoilless family of weapons was developed. The latest improvements are incorporated in our current 106mm rifle.

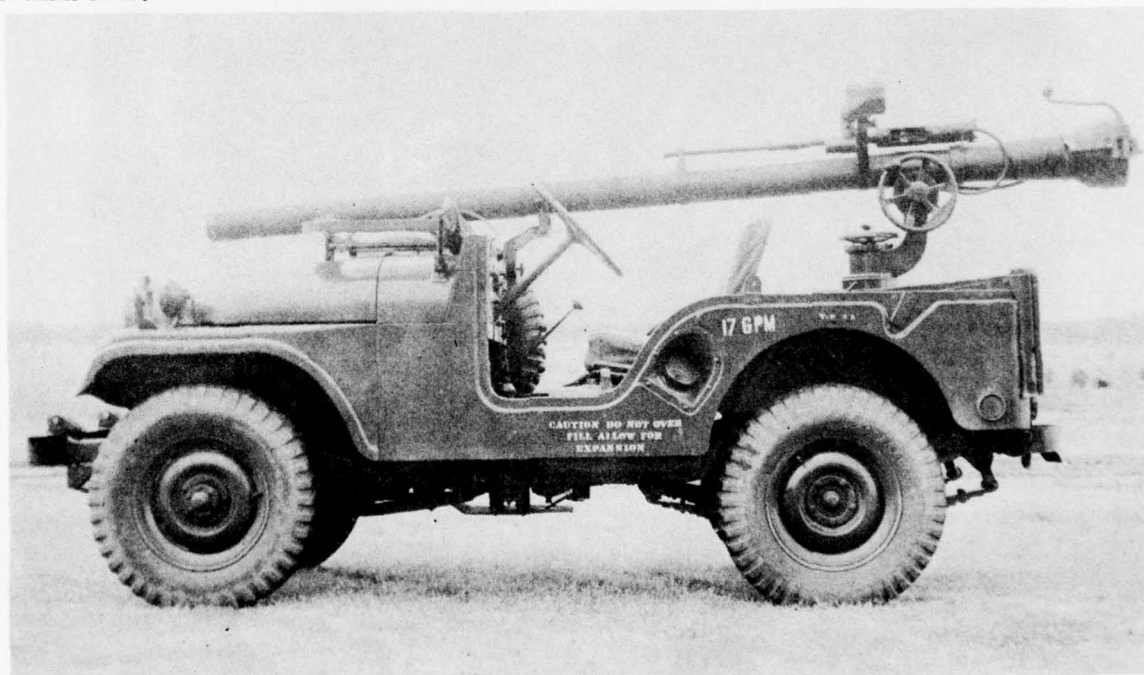


Figure 4. Rifle, 106mm, M40A1 on 1/4-Ton Truck, M38A1C.

Figure 4 shows the 106mm rifle, the rifle company's heavy antitank weapon, mounted on the 1/4-ton truck. There are two of these rifles in the weapons platoon of each rifle company. This weapon is manned by a crew of four and is extremely flexible. One of its many capabilities is that it can be ground mounted (Figure 5).

A principal advantage of recoilless weapons is their relatively light weight due to the absence of heavy recoil reducing parts. Recoil is eliminated by permitting a portion of the expanding propellant gases to escape to the rear through openings in the breechblock.

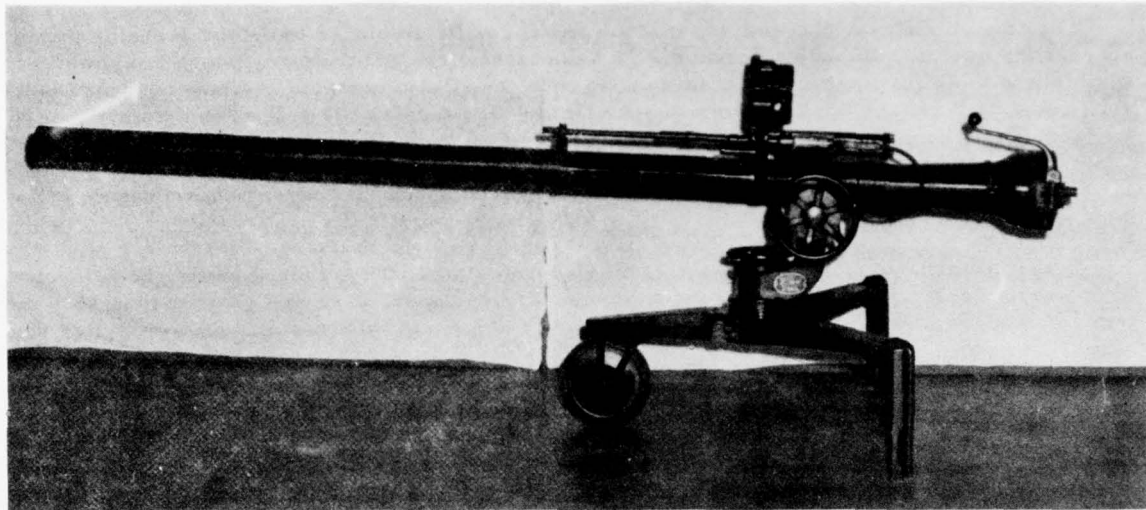


Figure 5. Rifle, 106mm, M40A1 (dismounted).

The 106mm rifle as shown in Figure 5 weighs approximately 470 pounds. The weapon on top of the 106mm barrel is the caliber .50 spotting rifle, which aids the gunner in determining range and leads to targets. The spotting rifle is the most effective method of fire adjustment yet devised and gives the 106mm rifle a first round hit capability of 85 percent at 1100 meters. The traversing mechanism permits 360-degree movement in controlled or free traverse.

Elevation is by means of this large elevating handwheel. Minor changes in elevation are made with the small knob in the center of the handwheel. This is also the firing knob which fires both weapons. By pulling, the gunner fires the spotting rifle; and by pushing it, he fires the 106mm rifle.

To demonstrate further the flexibility of the 106mm rifle, our demonstration squad will now break it down into a two-load carry (Demonstration).

Ammunition for the weapons system includes the high explosive antitank, high explosive plastic with tracer, and caliber .50 spotter-tracer.

Spotter-tracer ammunition is of special design. Note the caliber .50 spotter-tracer cartridge is shorter than a conventional caliber .50 machinegun cartridge. The projectile contains a tracer element and a white phosphorous filler. Upon impact the projectile emits a puff of white smoke. The gunner and squad leader observe both the tracer element and the puff of smoke in making fire adjustments.

Although the 106mm rifle is primarily an antitank weapon, it has a secondary mission of

providing direct fire support for the Infantry elements. To fulfill this mission it has available a high explosive plastic round that is effective against both personnel and armor. The primary round for the 106mm rifle is the high explosive antitank round, which employs the shaped charge principle to defeat armor. In order to obtain maximum penetration the projectile is fin stabilized in flight.

The explosive forces produced upon impact of this projectile are sufficient to penetrate the armor of any known tank.

The 106mm rifles of the weapons platoon are normally employed to defend probable armor approaches into the company's position. To demonstrate for you the tremendous firepower available to the rifle company, two antitank squads, located in nontactical firing positions to your right, will engage the tank hulls to your front. The target area will extend from Panel #6 to Panel #8. (Demonstration fired.)

The next speaker will be Lieutenant Allen who will discuss the longer range antitank weapons.

In the initial landing or first phase of an airborne attack, the airborne battle group must have weapons that will provide antitank and point target support at ranges greater than 1100 meters. A weapon which helps fill this requirement is the 90mm full-tracked, self-propelled gun, M56 (Figure 6).



Figure 6. Gun, 90mm, SP, M56.

There are six M56s in the assault gun platoon of the airborne division battle group. It has also been issued as an interim weapon in the assault weapon platoon of the Infantry division battle group.

The M56 is a low silhouette, highly maneuverable weapon capable of being air-lifted in

assault-type aircraft, and dropped by means of a parachute. It weighs 7 3/4 tons and has a ground pressure of only 4.5 psi. This low ground pressure permits the M56 to traverse terrain which is beyond the capabilities of other standard vehicles both wheeled and tracked.

The M56 is powered by a 200-horsepower, 6-cylinder, air-cooled engine and will attain a speed of 28 miles per hour.

Its armament is the 90mm high velocity gun, which is capable of firing a 24-pound projectile 19,000 meters. The maximum effective range of the 90mm gun mounted on the M56 is 4600 meters.

Ammunition for the 90mm gun may be classified into two basic types: antipersonnel and materiel, and armor defeating rounds.

The high explosive round is used against targets such as personnel, unarmored vehicles and buildings.

The smoke round is filled with white phosphorous and is used to burn and blind the enemy.

Two other rounds are armor defeating and use the kinetic energy principle to achieve armor penetration.

One of these, the armor piercing round with tracer, has a muzzle velocity of 3000 feet per second and is used against light and medium armor.

The other, the hypervelocity armor piercing round with tracer, has a muzzle velocity of 3900 feet per second and is used against heavy armor.

To demonstrate the accuracy of the 90mm gun on the M56, we will engage the tank to the left of Panel #9. Panel #9 is located at a gun target range of 900 meters. (Demonstration fired.)



Figure 7. Tank, 76mm Gun, M41A1.

The 76mm light gun tank, M41, is shown in Figure 7. There are two of these tanks in the reconnaissance platoon of the Infantry battle group. They provide mobile, armored fire support in reconnaissance and security-type missions

The tank is powered by a 500-horsepower, 6-cylinder, air-cooled engine and will attain a speed of 45 miles per hour. The tank is operated by a crew of four.

The reconnaissance platoon leader communicates with the two tanks in his platoon by means of voice radio. Each tank commander controls the operation of his own tank by means of an intercommunication system. Tied into the intercommunication system is an external phone mounted on the rear of the tank with which the Infantryman can communicate with the tank commander.

Its armament consists of a 76mm high velocity, flat trajectory gun, a coaxially mounted caliber .30 machinegun and a dual purpose ground-antiaircraft caliber .50 machinegun. The 76mm gun is capable of firing a 15-pound projectile approximately 14,000 meters. The maximum effective range of the weapon is 4600 meters. Ammunition for the 76mm gun is issued in the same two basic types as for the 90mm gun; that is, antipersonnel and materiel, and armor defeating rounds.

To demonstrate the capabilities of the M41 firing high explosive ammunition, the demonstration tank will engage the tank hull to the right of Panel #9. (Demonstration fired.)

The newest antitank weapon available to the Infantryman is the SS10 antitank guided missile (Figure 8) which is organic to the assault weapon platoon of the Infantry division battle group.

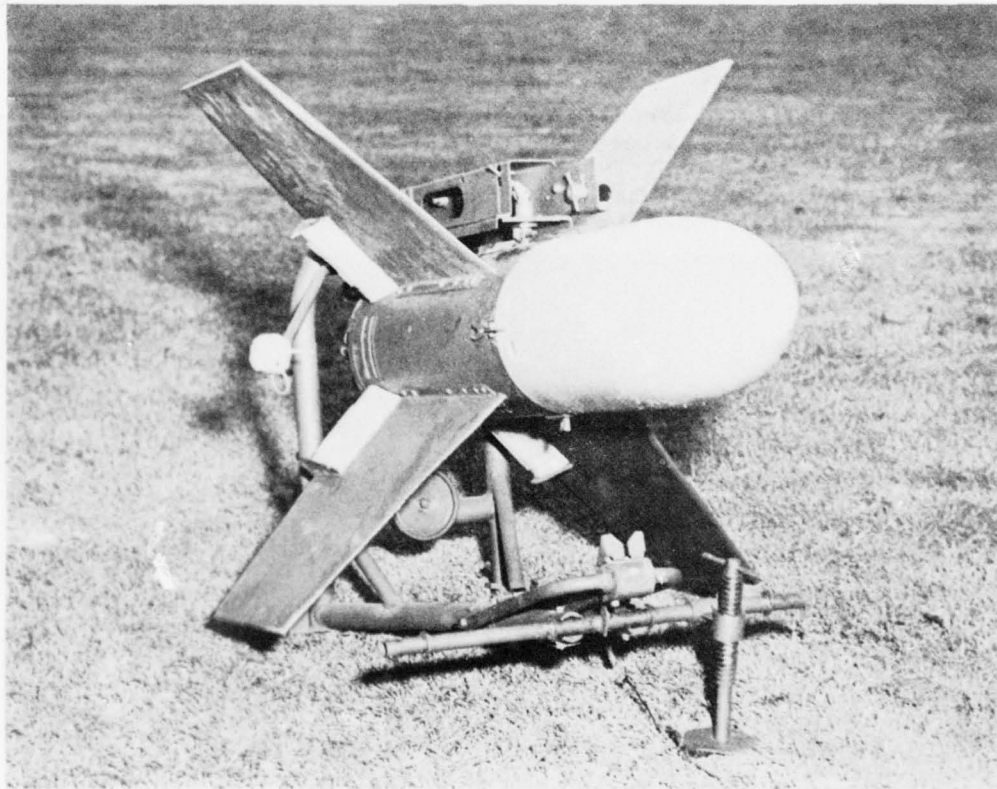


Figure 8. Missile, Guided, Antitank, SS10.

The SS10 is a light, self-propelled, remote controlled guided missile designed primarily to deliver accurate and lethal fire against tanks and other armored vehicles. It is capable of delivering a warhead which will penetrate heavy armor to a minimum practical range of 450 meters and a maximum practical range of 1600 meters. The missile itself weighs 33 pounds, but is never separated from its 15-pound launcher until fired. It has a length of 34 inches, a wing span of 29.5 inches and a body diameter of 6.5 inches. Located on the rear of the missile is a pyrotechnic flare which aids the gunner in tracking his missile during flight. The missile is propelled by a two-stage, solid-propellant rocket, comprising a booster and sustainer motor. The booster motor launches and accelerates the missile to a speed of 80 meters per second, or approximately 180 miles per hour. At this time the sustainer motor takes over and maintains this speed throughout the remainder of the missile's flight to the target. The missile is brought into alignment with the target by means of a manual control stick operated by the gunner. The control stick is mounted vertically and oriented so that a backward or forward movement directs an up or down command and a left or right movement directs the missile left or right. These commands are transmitted from the guidance equipment to the missile by means of two wires which unwind from within the missile during flight. Up to ranges of 800 meters, the gunner tracks the missile with his naked eye. For ranges exceeding 800 meters, the gunner is required to use binoculars.

The SS10 may be launched from the ground, a vehicle or a helicopter. The principal method of launch is from the 1/4-ton truck, modified with an SS10 mounting kit. It carries three missiles mounted and ready for launching. Since we normally launch the missile from a defilade position, our gunner cannot guide the missile from the vehicle. By using the cable mounted on the side of the vehicle we can move our gunner 100 meters to the front, flanks, or rear where he can observe his front and guide the missile to the target.

To demonstrate the capabilities of the SS10, our gunner will engage the tank hull located to the left of Panel #11 at a range of 1300 meters. The missile will be fired from the 1/4-ton truck. (Demonstration fired.)

This concludes the antitank guided missile portion of the presentation. I will be followed by Lieutenant Parker who will discuss Infantry mortars.

Section IV. MORTARS (81MM and 4.2-INCH)

FIRST LIEUTENANT A. B. PARKER

Instructor, Mortar Committee, Weapons Department

The weapons that you have seen thus far today have been direct fire weapons with the gunner laying directly on the target. Since the mortar is an indirect fire weapon, it is fired from a protected position and adjusted onto the target by a forward observer. The firepower that these mortars deliver is essential to an Infantryman in the attack or defense.



Figure 1. Mortar, 81mm, M29 on Mount, M23 A3.

The mortar found in the rifle company is the 81mm mortar (Figure 1). This is the most recently standardized model of the 81mm mortar. The complete mortar weighs 93 pounds and has a maximum range of 3650 meters. There are three 81mm mortars in each rifle company and one in the reconnaissance platoon for a total of 16 within the battle group.

There are several types of ammunition used with the 81mm mortar. The high explosive round weighs 9 pounds, has a maximum range of 3650 meters and a bursting area 25 meters wide by 20 meters deep. This round may be equipped with either the combination superquick-delay or the variable time fuze. It is primarily used against personnel. We will fire a demonstration using the high explosive round armed with a variable time fuze. This fuze is designed to detonate the round at a height from 4 to 20 feet above the ground depending on the angle of fall. We will engage an area target extending from Panel #10 to Panel "E" and fire three high explosive rounds from each of three 81mm mortars. (Demonstration fired.)

The 81mm mortar has an illuminating round which illuminates a portion of the battlefield 1000 meters in diameter.

The smoke round for the 81mm mortar has a maximum range of 3650 meters and may also be equipped with either the superquick-delay or the variable time fuze. We will fire three smoke rounds from the #3 mortar with the same charge, elevation and deflection as the last mission. The rounds will burst directly down range in the area marked by Panel #10. Note that the target was designated as an area target. This is consistent with the characteristics of mortars, since the mortar is not a point target weapon but is designed to cover an area target with casualty producing fragments. (Demonstration fired.)

The 4.2-inch mortar platoon consists basically of two firing sections, each equipped with three 4.2-inch mortars. The complete mortar weighs 660 pounds, has a maximum range of 5500 meters and is transported in a 3/4-ton truck with a 3/4-ton trailer.

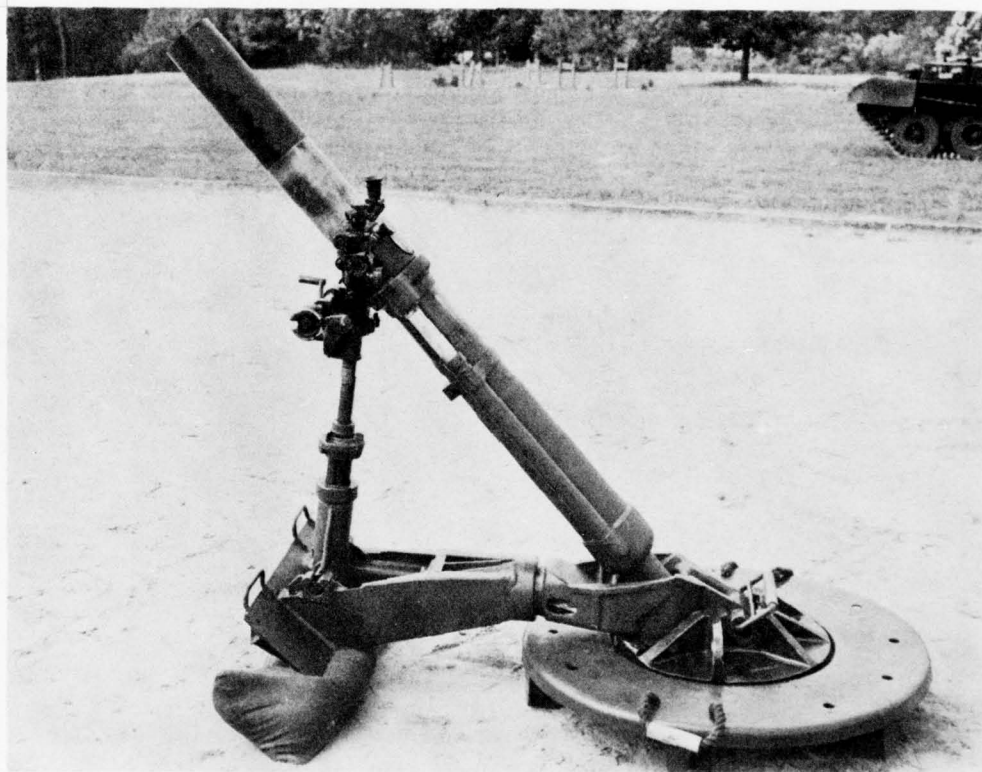


Figure 2. Mortar, 4.2-Inch, M30 on Mount, M24A1.

The 4.2-inch mortar (Figure 2) differs from other mortars in that it has a rifled barrel. This rifling imparts spin stability to the round in flight and eliminates the need for conventional fins.

There are three types of ammunition used with the 4.2-inch mortar. The high explosive round weighs 27 pounds, has a maximum range of 5500 meters and a bursting area 40 meters wide by 15 meters deep. The round comes equipped with a combination superquick-delay fuze.

The 4.2-inch mortar is normally fired at a constant elevation; and range changes are obtained by varying the amount of propellant on each round. A demonstration will now be

conducted using the high explosive round aimed with two different fuzes; delay and superquick. The first rounds will burst directly down range short of Panel "X" at a range of 1800 meters. The charge will be varied on successive rounds, causing them to fall progressively closer to the stands. (Demonstration fired.)

The smoke round for the 4.2-inch mortar has a maximum range of 5500 meters and a bursting radius of 20 meters.

The illuminating round has a maximum range of 4700 meters. It burns for 70 seconds and illuminates an area approximately 800 meters in diameter.

We will now fire a demonstration using the high explosive round equipped with a variable time fuze. Nine high explosive rounds, armed with this fuze, will be fired from three 4.2-inch mortars. The rounds will burst in the vicinity of the tank hull directly over Panel #5 and at a range of 1600 meters. You will be able to identify the air bursts by the red flame of the exploding rounds and the fragmentation area. (Demonstration fired.)

The Infantry has always been concerned with the problem of mobility as it affects the employment of our mortars. To show how added mobility may be provided, we have mounted, without major modifications, the 4.2-inch mortar on a full tracked vehicle (Figure 3).

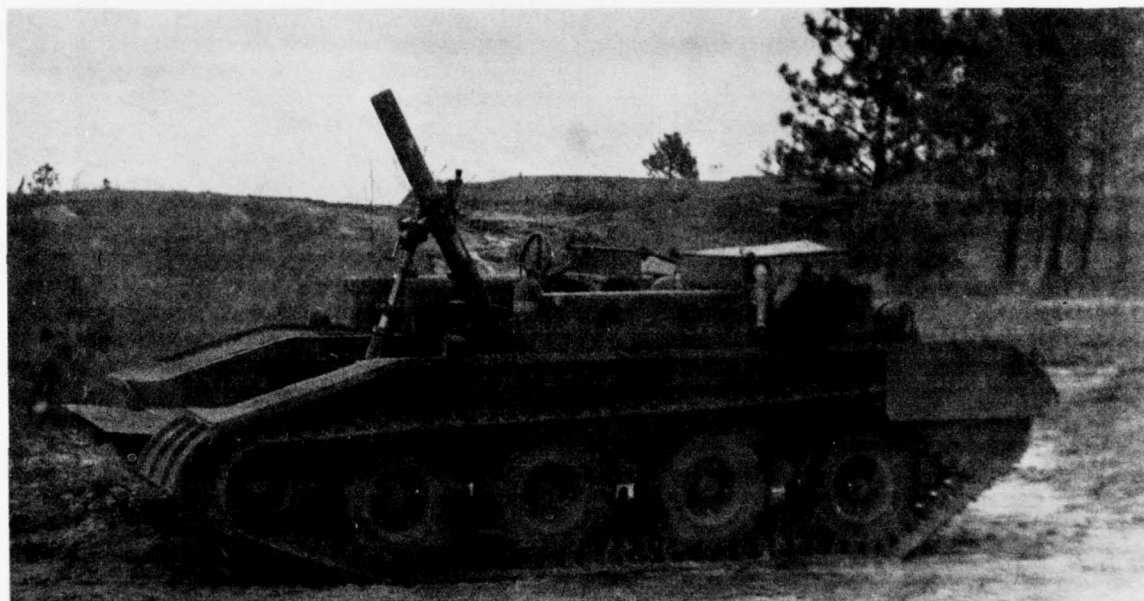


Figure 3. Mortar, 4.2-Inch, M30, on Chassis, M56.

To the right of the tracked carrier, you see the present mortar squad found in the mortar platoon of the combat support company. This squad consists of seven men: a squad leader, a gunner, an assistant gunner, and four ammunition handlers, one of whom has a primary duty as driver. The basic load carried by this squad is 74 rounds. Since the prime mover is a wheeled vehicle, it is limited in cross country mobility.

At the Infantry School, we visualize that the 4.2-inch mortar mounted on a tracked carrier will require a five-man squad, including the driver. The basic load will be approximately 90 rounds, and the mortar will retain its ground-mount capability.

At this time the mortar squads will move forward to a non-tactical firing position from where the mortar mounted on the carrier will engage a target in the vicinity of the tank hull to the left of Panel "X" and at a lesser range. The ground mounted mortar will engage the finger of woods extending into the impact area from the right of the range. Observe the speed with which the carrier moves into position, fires one round in adjustment, and then fires five rounds for effect on the target. In comparison, observe that the mortar squad on the right must first ground-mount its weapon and then fire at least two rounds to settle the baseplate. After the settling rounds have been fired, they too will fire one round in adjustment and five rounds for effect. In order for you to better identify the fires of the two squads, the carrier squad will fire white phosphorous ammunition and the ground-mounted squad will fire high explosive ammunition.

In the employment of mortars, particularly in loose, sandy soil, mountainous terrain or swamp area, the majority of time consumed in mounting this weapon is in preparation of the baseplate position. If a carrier acts as the firing platform for the 4.2-inch mortar, this problem will be eliminated. In future battles we can expect to receive radar controlled counter-mortar fires within three minutes after our initial round has been fired. Such an enemy capability necessitates our being able to "shoot and scoot." As was just demonstrated by using a carrier for the 4.2-inch mortar, we can engage a target and be moving to a new position within this time limit.

This added mobility will assist the mortar in accomplishing its mission, that of providing close and continuous fire support to the rifle elements of the Infantry battle group.

This concludes the Weapons Department presentation.

CHAPTER 4

RANGER DEPARTMENT PRESENTATION

Section I. RANGER ORIENTATION

FIRST LIEUTENANT ROBERT L. DRUDIK

Instructor, Patrolling Committee, Ranger Department

INTRODUCTION

The purpose of this orientation is to acquaint you with certain aspects of the Ranger Course of Instruction.

The history of the Army Ranger is a long and colorful one. Rangers have a proud heritage that dates back over 200 years to our French and Indian wars and to Rogers' Rangers organized in the year 1756. Ranger techniques and methods of operations were an inherent characteristic of frontiersmen in the American colonies prior to the American Revolution. But it was Major Robert Rogers who was the first to capitalize on such techniques and methods of operation. After Rogers came Morgan, Marion, Mosby, Darby, and Merrill, all of whom contributed in part to this proud heritage. With the exception of the Spanish American War and World War I, we have had Ranger-type units in operation throughout our military history. For example, during World War II we had Ranger battalions operating in the Mediterranean theater, Normandy and the South Pacific. The concept during the Korean conflict was that of Ranger-Airborne companies. Volunteers were trained here at Fort Benning under what was then the Ranger Training Command. Six of these companies saw action in Korea.

However, in 1951 the Department of the Army directed that Ranger training be extended to all combat units, and further, that Ranger training be placed on an individual, rather than a unit basis. Note that this was a two-fold mission. First, that all Infantry units conduct Ranger training, and second, that the Commandant, United States Army Infantry School, select a Ranger cadre for the purpose of conducting a Ranger Training Program. In 1954 it was further directed that all Regular Army second lieutenants of the combat arms select and attend either Ranger or Airborne training.

The Ranger Course of Instruction covers a period of eight weeks, during which time we present 838 hours of instruction. This averages out to better than 100 hours a week, most of which is devoted to night training. The course is divided into three phases. A preparatory phase of two weeks at Fort Benning physically hardens the student and develops the basic skills of individual soldiering. From the time of reporting to completion of the course, the student is forced to adhere to rigid standards of discipline. All students are addressed as "Ranger" and are expected to be alert and responsive to orders. Following the preparatory phase, the class moves to the Ranger Jungle, Swamp and Waterborne Camp located at Eglin Air Force Base, in northwest Florida for three weeks of training in jungle, waterborne and airlanded operations. The student then goes to the Ranger Mountain Camp located near the old gold mining town of Dahlonega in the mountains of northeast Georgia. For three weeks he trains in basic mountain tactics and techniques. During the Florida and Mountain phases of training, the student is exposed to 15 basic problems, three of which are waterborne and three of which are air-landed. The patrol is employed as the teaching medium, and these vary in size from a five-man reconnaissance patrol to a company-size raiding party. They vary in time from several hours to 96 hours and in distance from several thousand yards to 50 miles. The student gets very little sleep--averaging three to five hours of sleep per night.

Each patrol is accompanied and closely observed by a Ranger qualified officer or noncommissioned officer. An aggressor enemy harasses the patrol, forcing the student into unexpected situations which require prompt, yet sound decisions. Upon return each patrol is critiqued in detail by the Ranger instructor, thus allowing the student an excellent opportunity for self-evaluation and self-analysis. It is through training such as this that a fighting soldier is developed, who is physically and mentally capable of sustained action on the battlefields of this atomic or space age, and one who can be depended upon to continually exert his influence regardless of time, or place or circumstances.

For training is realistic, rough and to a degree hazardous--the closest approach to combat conditions that can be achieved in a peace-time Army. The number and variety of situations faced by the Ranger student have been compared to those that a soldier faces in two or three campaigns in battle.

In summary, the Ranger Course is the highest form of combat conditioning in the Army today. It develops the overall combat potential of the Army's fighting soldiers to a greater degree than any other course in the Army. It is of benefit to any man, regardless of branch, rank or service. An individual in the Ranger Course gains an insight into himself and his fellow man. He develops self-discipline. Men who make excellent tactical decisions in the classroom and in normal training programs sometimes fail miserably under the stress of uncomfortable field conditions. Hunger, fatigue and the pressure of combat itself uncover weaknesses an individual never knew he had. Men under such conditions often lose their poise, their self-confidence, their sense of direction, their equipment, and worst of all--control of the men they may be leading. The Ranger Course combat conditions the students to the hazards of weather, terrain and the enemy. As one student recently expressed it, "Ranger training is the best insurance I've ever taken."

HAND TO HAND COMBAT

The average soldier, if trained only in the use of his basic weapon, loses his effectiveness if his weapon fails to fire or if he should lose or break it. But with a knowledge of hand-to-hand combat and the confidence and aggressiveness to fight hand-to-hand, the Ranger is able to attack and dispose of his opponent. We teach hand-to-hand combat for several reasons. First, hand-to-hand combat is an excellent physical conditioner and body toughener. Second, it builds a spirit of aggressiveness in the individual soldier and instills the will to fight. Third, it instills confidence in the student's ability and that of his fellow Rangers. Fourth, hand-to-hand combat teaches the Ranger techniques of fighting or defending himself when unarmed and confronted with an armed opponent. And finally, our instruction in hand-to-hand combat provides a basis for the Ranger student to properly set up training in hand-to-hand combat when he returns to his unit.

Now, there are several fundamentals that we stress in our hand-to-hand combat training. The first of these is the use of your opponent's momentum to your advantage. We teach the student not to match his strength against that of his opponent but to set his opponent in motion so that he can use the fundamental of momentum.

Second, we stress the use of maximum strength against maximum weakness. The Ranger uses his hand, arm and body against his opponent's weakest point--the wrist.

Third, we stress the use of any and all available weapons. The Ranger student learns that there are no rules in hand-to-hand combat. He is taught to use whatever means are available to kill or maim his opponent. If the Ranger has nothing but his hands, he is far from defenseless. Every throw, hold or takedown is followed by a killing blow with the hand or foot.

Next, we stress a good balance position. This position is merely a modified boxer's crouch. Weight is evenly distributed over the body. Hands are carried high to protect the face, to deliver a sharp killing blow or to execute a throw or takedown. This is the Ranger's physical balance or "on guard" position.

We encourage the Ranger student to use the growl because it upsets his opponent's mental balance, immediately puts him on the defensive and allows the Ranger to gain a mental advantage. A final fundamental that we encourage the Ranger to develop is accuracy and speed. With emphasis on the fundamentals, the student will develop accuracy. Speed will come with practice.

Throughout the Fort Benning phase of training, the Ranger student is taught throws, take-downs, counters and holds. In the event the Ranger should find himself confronted with an enemy armed with a knife and he himself be unarmed, we teach him a series of knife disarming counters. During his training, the Ranger is also taught methods of knife fighting: how to hold the knife, the knife fighter's stance, a modified stance, and the vulnerable points--where to strike an opponent to kill him.

PUGIL STICK

The training of a bayonet fighter should be varied to keep up his interest and enthusiasm. For this reason the Ranger Department has adopted the pugil stick. The pugil stick is an excellent training device, since it allows the Ranger to develop his skill against a live opponent.

The weight and length of the pugil stick approximates that of the M1 rifle with bayonet attached. One end of the stick is marked "butt" and the other is marked "blade." The movements with the pugil stick are executed in the same manner as with the rifle. We teach with competitive bouts. To do this the students are broken down into three-man groups. Two are contestants and the third man acts as referee. Each bout last three rounds; and in order to score a point or win a round, a contestant must score a solid blow with either end of the pugil stick to a vulnerable point, i.e., the head, the throat, the chest, the stomach or the groin region. To commence the bout, the referee commands the contestants to face each other, take three paces to the rear and draw their lines. This line serves two purposes. First, it outlines the area in which the bout is to be conducted; second, it forces the nonaggressive student to stand and fight rather than withdraw over a physical boundary and lose the bout. To start the bout, the referee commands "ON GUARD." Once a point is scored, the referee commands "POINT," "RECOVER," and then continues with the next round.

To further develop skill and teamwork, we teach the Ranger how to fight independently and then as a team. When fighting alone and faced by two opponents, the Ranger will engage only one man at a time so that he may successfully dispose of both. When fighting as a team and opposed by one opponent, both Rangers will move directly in on the opponent, one Ranger attacking directly from the rear.

Hand-to-hand combat teaches the Ranger to be alert and aggressive, to have confidence in his ability to close with an enemy; and regardless of circumstances, to overcome that enemy.

MILITARY MOUNTAINEERING

Rappelling is an integral part of mountaineering instruction given during the course. It is the technique of descending a vertical surface by means of artificial devices, and it is taught in the Ranger Course for several reasons. First, it helps the student overcome an inherent fear of height; second, it builds confidence in the individual; and third, it teaches the Ranger an additional military skill. He learns again that there is virtually no impassable terrain for determined, well trained and well led Infantrymen.

The seat hip rappel is the type of rappel most often used by professional mountaineers. In order to execute this rappel, certain items of mountaineering equipment are essential. First, the nylon climbing rope. This rope is made of 100 percent nylon, has a tensile strength of 4000 pounds when new, and is 120 feet in length. Another amazing characteristic of this rope is its elasticity. It will stretch one-third of its normal length prior to breaking. A second essential item is the nylon sling rope. This rope has the same characteristics as the nylon rope except that it is approximately twelve feet in length. A third item, the snaplink, is made of steel and has a spring loaded gate. This snaplink has a tensile strength of 2000 pounds when the gate is closed.

To get into the Swiss Seat, the Ranger holds the sling rope across the small of the back; and for a right-handed man, the rope in his right hand will be twelve inches shorter than that in his left. An over-hand knot is tied and the ends placed between the legs without crossing and brought up around the waist and then tied off over his left hip using a square knot with the ends half-hitched. The snaplink is passed through the ropes at the waist with the gate up and away from the user. The Ranger then puts on heavy leather work gloves to prevent burning of his hands. He then faces the nylon climbing rope with the anchor point on his left and runs the climbing rope down through the snaplink. He takes up slack between the snaplink and the anchor point and runs the rope under and back through the snaplink a second time. To descend, the Ranger faces the anchor point and merely walks backwards down the cliff. The Ranger may desire to stop during his descent. For this, he applies his "break"; that is, he tightens his right hand around the rope, for it supports his weight and controls his rate of descent. The left hand is merely a balancing or stabilizing agent.

In many cases it will be necessary to haul personnel and equipment up a vertical surface. For such a purpose the Ranger student is taught the use of the vertical haul line. It consists of a heavy "A" frame constructed and lashed together at the top of the cliff with sufficient climbing rope to reach the bottom. The ends of the climbing rope run through a pulley or snaplink at the apex of the frame and are tied together, creating what is known as an "endless" rope. At opposite extremes in this rope are tied two butterfly knots. The Ranger engages his snaplink with a butterfly knot and climbs a knotted rope, also extended from the "A" frame. He is assisted by the men at the bottom who pull the "endless" rope. Another butterfly knot moves down where the second man hooks up and climbs to the top.

A second type of rappel is the body rappel. The body rappel is suitable for descending over relatively long distances. The Ranger proceeds down by taking short side steps to his right. The left hand does not support or hold the Ranger's weight but serves only as a guide hand to stabilize his descent. The right hand controls the rate of descent; and the breaking procedure is different from that of the seat hip rappel. If the Ranger must stop during his descent, the arm is thrown up diagonally across the chest, creating the "break" effect. When he is ready to continue he extends his right hand and proceeds down. He plans the rope through the fingers of his leading hand to prevent the rope from knotting. His upper arm does not support his weight but merely stabilizes his descent.

The descent is rather slow; this is understandable when you consider the amount of rope friction of his body. The nylon rope is termed a "hot rope" by virtue of the extreme amount of friction generated between the rope and clothing. For this reason padding should be worn by the Ranger when using the body rappel.

Another type of rappel used by the Ranger is the seat shoulder rappel. This rappel is used when the individual is carrying a heavy load on his back, such as boxes of ammunition or a machinegun. You will note that the climbing rope is passed over his shoulder and across the top of the packboard, thus allowing for the heavy load and the change in the center of gravity. This particular rappel prevents the Ranger from toppling over backward due to the load he might be carrying.

In many cases the Ranger is confronted with the problem of moving heavy equipment across deep ravines, mountainous terrain or mountain streams. In addition to the vertical haul line, the Ranger student is taught the suspension traverse. It is merely a rope so positioned as to bridge very difficult terrain. Cargo may also be transported up and down the traverse by means of the belay ropes attached to the load to control the rate of descent.

A technique for evacuating seriously wounded or stretcher cases is also taught the Ranger student in the mountain phase of training. Evacuating a wounded soldier down a vertical surface is extremely serious and requires exceptional teamwork. The wounded individual is secured to the litter by the use of nylon sling ropes. Two saplings of approximately eight to ten feet in length are cut and attached to the stretcher to prevent cutting by jagged rock edges. The team moves down, one on each side of the stretcher, with both in a position to administer to the patient. A belay rope attached to the stretcher controls the stretcher's rate of descent; the rope is belayed by an individual at the top of the cliff. On the command "TENSION," belay of the stretcher is stopped, the rappelling team may tie-off if necessary and may take a short respite or administer to the wounded man. On the command "SLACK," the rope is belayed slowly and movement down the cliff continues. As the team touches down, tension is again taken on the belay ropes as the two Rangers free themselves from the climbing rope. On the command "SLACK ALL THE WAY," the belay rope is released and the litter patient is evacuated from the cliff.

In the event a soldier is lightly wounded and a stretcher is not available, another technique of evacuation is taught the Ranger student. This method is called the pickaback evacuation. The patient is secured to the Ranger by means of a sling rope and, as the term applies, rides pickaback fashion down the face of the cliff. A belay line extends from the patient to the top of the obstacle; however, the belayer does not control the rate of descent in this case. The belay line is used to arrest movement if an emergency develops.

Initially, to gain confidence in himself and his climbing equipment, the Ranger student is taught to lean back off the lip of the cliff and keeping his feet flat against the surface, to walk down very slowly. Here, he checks his equipment and develops his self-confidence. With experience the Ranger gains confidence in his ability and his equipment and is capable of making a more speedy descent.

RANGER CONFIDENCE TEST

A soldier fights four battles: the weather, the terrain, the enemy and himself. In the Ranger Course, we place students in situations and on terrain that will tax their capabilities to the maximum and require their fighting these four battles in order to accomplish the assigned mission. The student must operate effectively in all types of weather and over the most difficult terrain available. He is constantly harassed by an aggressor enemy whose tactics and techniques approximate those of an actual enemy. In spite of all this, however, we feel that this fight within himself, this fear of being afraid which every soldier faces in combat, is lacking to a degree. To inject this element of fear the Ranger Department has developed special tests. These tests are a prerequisite to successful completion of the course.

The first of these tests is the rope drop which is conducted during the Florida phase of training. The test consists of climbing a vertical pole, walking a 60 foot trestle suspended some 35 feet over water, climbing a short rope to another horizontal rope, monkey-crawling this rope to a predesignated point and, on order, dropping 45 feet into the water.

The second of these tests is conducted during the Mountain phase of training and is called the "death slide." This test consists of: climbing a swaying rope ladder to a platform suspended 80 feet in the air, hooking a cable block to a steel cable, sliding down the cable and, on command, dropping into the water.

1. Prior to execution of the confidence tests, a Ranger cadreman demonstrates the procedures to the Ranger students.

2. Demolitions are utilized in order to create a combat realism effect.

3. Rangers are required to report successful completion of the confidence test to the Assistant Instructor. Sometimes the Ranger is required to do push-ups because of improper execution of the test itself or because of incorrect reporting procedures.

4. In his enthusiasm, a Ranger will sometimes request permission to do pull-ups. We in this department have never been known to refuse a request for pull-ups.

SUMMARY

The training discussed here today gives the highlights of Ranger Course of Instruction. This training is within the capabilities of most units. For example, a program incorporating much of the Ranger Course of Instruction was conducted at the Virginia Military Institute in March, 1959 by three Ranger officers and six Ranger qualified enlisted men. This team conducted a four-day Ranger training program for individuals with no previous military experience other than their normal cadet training program.

Remember, Ranger training develops self-confidence, self-discipline, tactical know-how and the ability to operate day and night over any type of terrain. It affords a man an opportunity to prove himself to himself as well as to others in a most challenging course of instruction. It is a must for the professional officer or hard corps noncommissioned officer. Ranger training is the highest form of individual Infantry training in the Army today, and it is a means whereby the United States Army develops the ultimate weapon - the individual fighting soldier.

Section II. SMALL UNIT TACTICS

CAPTAIN JAMES E. PRICE

Instructor, Attack Committee, Ranger Department

MAJOR GORDON E. WILLIAMS

Instructor, Defense Committee, Ranger Department

Welcome to the Rifle Squad and Platoon portion of the Ranger Department's presentations.

This instruction ties in closely with periods of instruction that you have received from the Command and Staff Department relative to company and battle group tactics.

The purpose of this orientation is to acquaint you with the problem areas and minor revisions that have been made in squad and platoon tactics and techniques due to the acquisition of the new family of weapons and radios.

My orientation will include the employment of the rifle squads and platoon, as currently organized, in offensive tactics. Major Williams will follow with an orientation on defensive tactics. On your table, for future reference, you will find a copy of the platoon and squad offensive and defensive tactics advance sheets and also a pad and pencil for any questions that may arise during this presentation. At the end of the presentation, a panel composed of officers from the Ranger Department will entertain questions that you have relative to platoon tactics.

RIFLE COMPANY ORGANIZATION

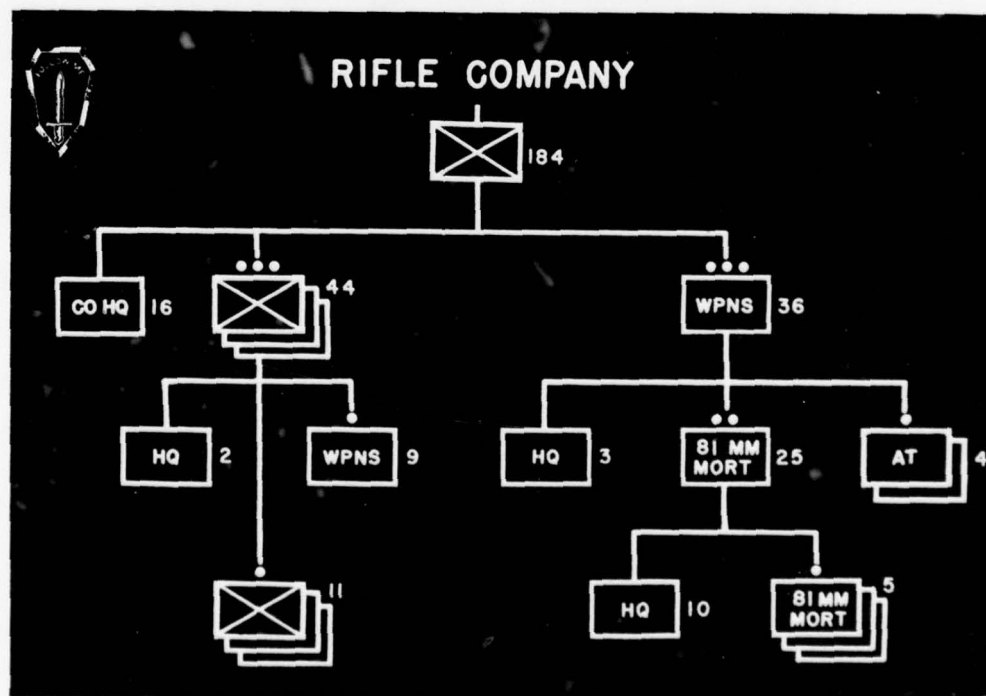


Figure 1.

First, let us briefly review the organization of the rifle platoon.

There are three rifle platoons in the rifle company (Figure 1). Each rifle platoon consists of one officer and 43 enlisted men. The platoon headquarters is composed of the platoon leader and the platoon sergeant. Note the messenger has been eliminated. The platoon has three rifle squads and a weapons squad.

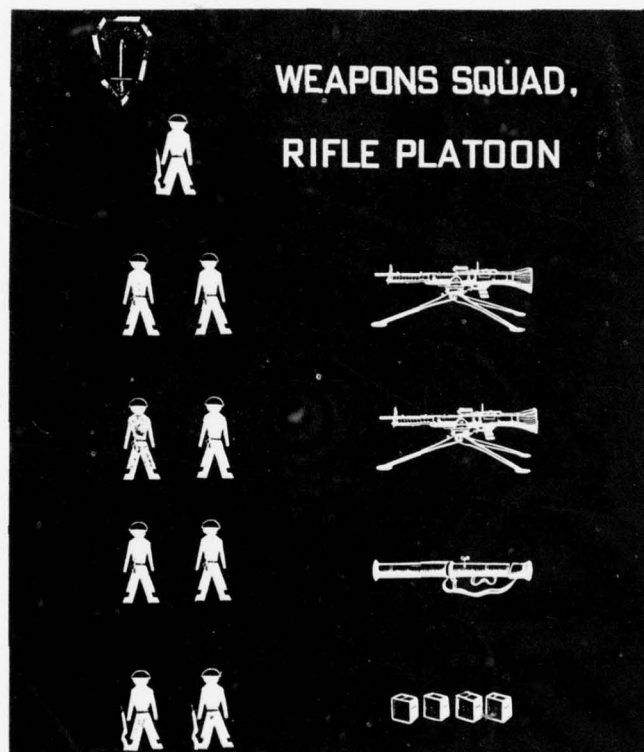


Figure 2.

The rifle squad is composed of 11 men, a squad leader, and two fire teams (Figure 2). The fire team leaders are fighter leaders. Each team has an automatic rifleman, who is armed with an M14 rifle modified to include a bipod, and three riflemen.

The weapons squad is composed of nine men and is organized into two M60 machinegun teams, a rocket launcher team and the ammunition bearers (Figure 3). The gunners and assistant gunners of each team are armed with the .45 caliber pistol.

All personnel, other than the gunners, the assistant gunners and the automatic riflemen, are armed with the 7.62mm M14 semi-automatic rifle.

Recent changes in the equipment within the rifle platoon have only resulted in minor revisions in offensive tactics and techniques. For the most part, these changes have simply increased the ability of the rifle platoon to accomplish its mission. The mission of the rifle platoon in offensive action is unchanged: "to close with the enemy by means of fire and maneuver

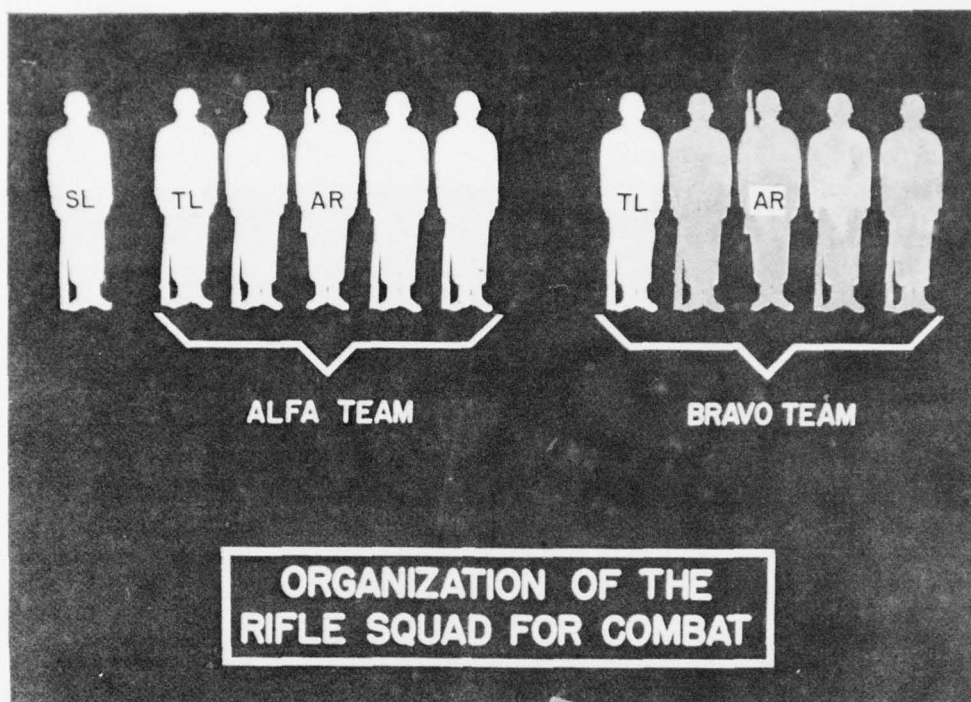


Figure 3.

in order to destroy or capture him." In accomplishing this mission, the rifle platoon uses the fires of all organic, attached and supporting weapons to neutralize the enemy. Under the protection of these supporting fires, the platoon maneuvers to an advantageous position from which to close with the enemy.

TACTICAL PROBLEM

Now I will set up a situation and go through the actions the platoon leader will normally take in preparation for and conduct of an attack; the minor changes that new weapons and communication equipment have had on platoon and squad offensive tactics will be pointed out.

Let's get oriented on the terrain chart we will be using during this situation (Figure 4). North is toward the top of the chart. The distances involved are as shown on this range indicator scale on the side and bottom of the chart. This road network running generally north-south and east-west is hard-top and furnishes a high speed approach into the area. This stream running generally north-south is fordable to foot troops and vehicles except here at the pond. The bridge over the stream has been knocked out. Friendly forces have been advancing north and now hold a line extending through the spur and Telegraph Hill. The line of contact will be our line of departure. From Telegraph Hill on the line of departure, observation to our front is good except within the woods and that portion of the objective obscured by the knoll. Visibility in these woods is 50 to 75 meters. There is an estimated reinforced squad of enemy on Hill 103 opposing the second platoon.

We will concern ourselves only with the second platoon zone of action, which is bounded by a line of departure, an objective, the road as the left boundary, and from Telegraph Hill north to the bridge and following the stream as the right boundary.

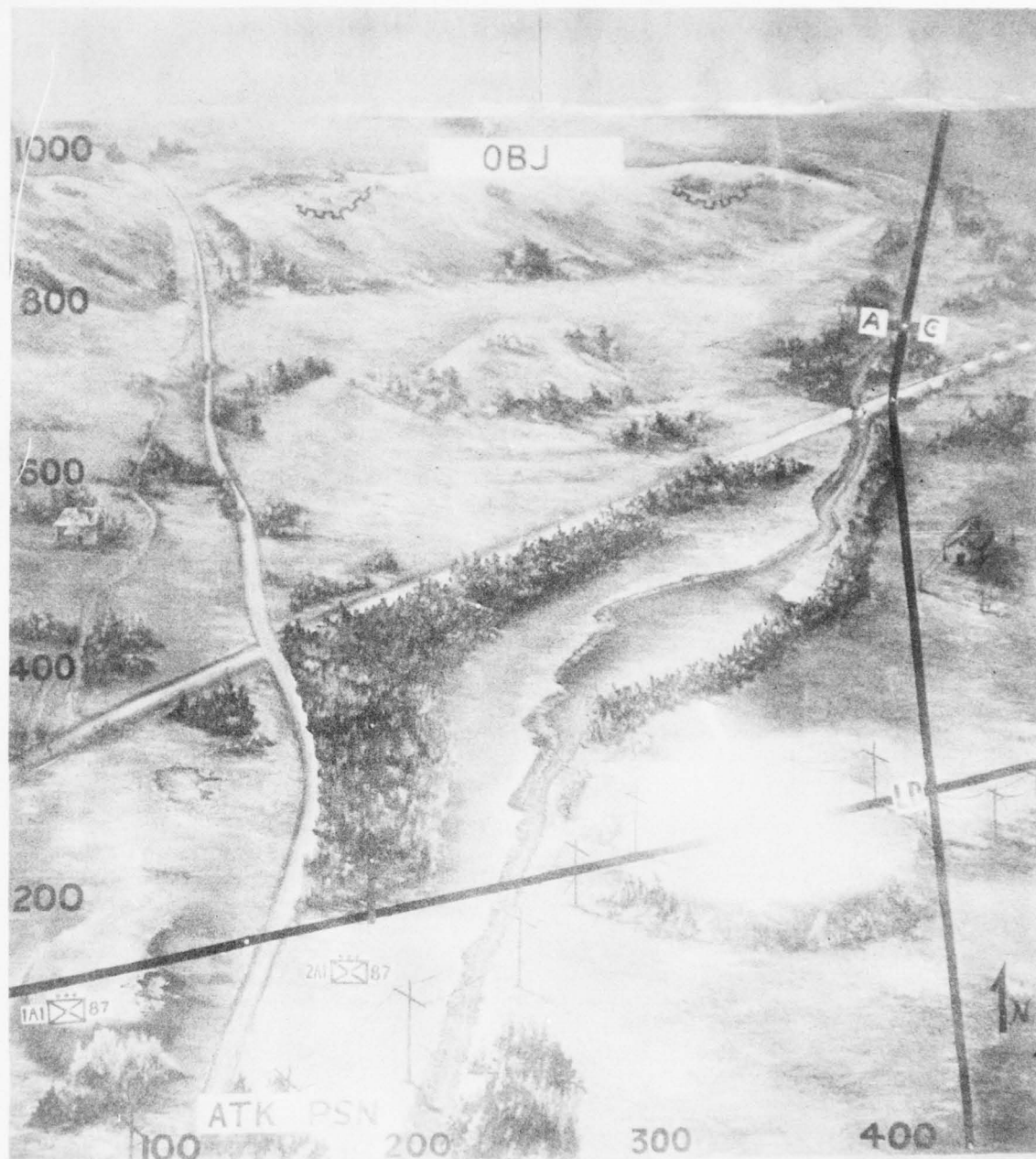


Figure 4. Phase I: Terrain Chart

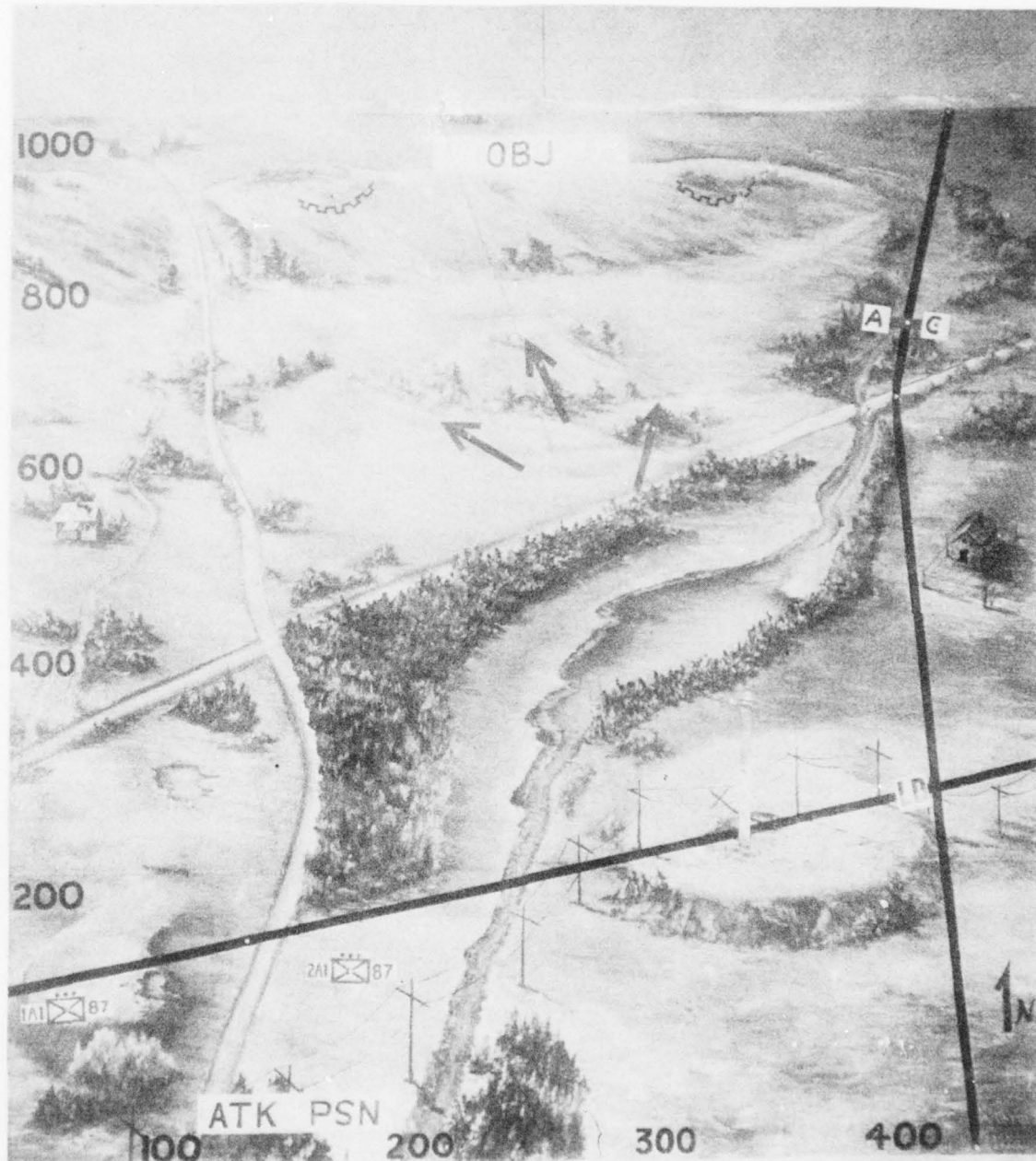


Figure 5. Phase 2: Movement Along The Route.



Figure 6. Phase 3: Platoon Assault Line.

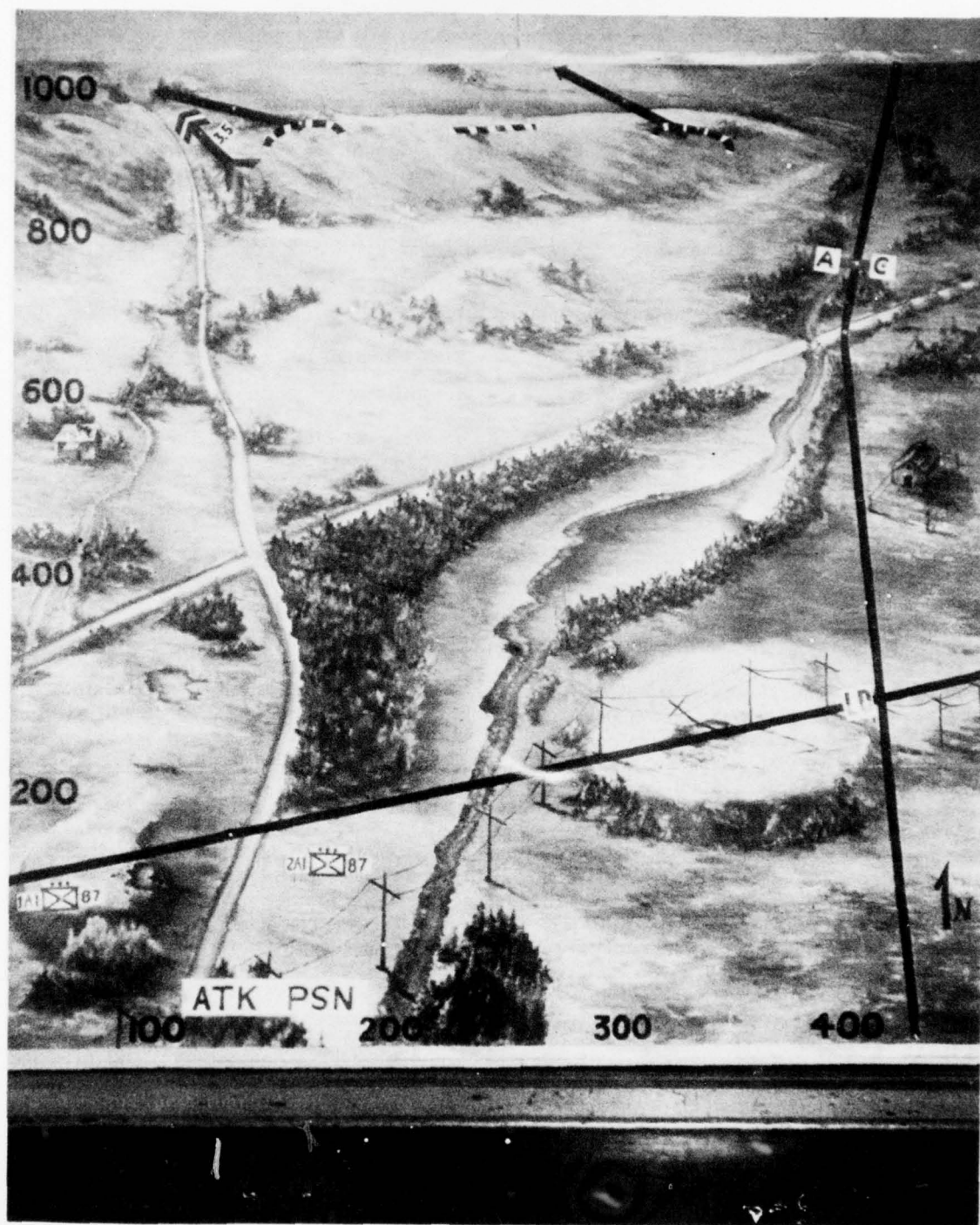


Figure 7. Phase 4: Consolidation on Objective.

In accomplishing its assigned mission, the rifle platoon will normally execute a frontal or a flank attack. It may participate in an envelopment but will not normally execute one by itself.

The method of attack to be used at the platoon level is determined by considering the mission assigned to the platoon, the strength and location of the enemy, the terrain over which the platoon will attack, and the troops available to the attacking unit. When the platoon leader considers these factors, he is actually making an estimate of the situation. Based on this estimate of the situation, he formulates his plan of attack.

A plan of attack consists of a scheme of maneuver and a fire support plan and is the basis for the platoon attack order.

Below, I have listed the elements of a plan of attack.

Scheme of Maneuver.

- a. Route
- b. Formation
- c. Assault
- d. Consolidation
- e. Control

Fire Support Plan

- a. Initially
- b. Between Line of Departure and Assault Line
- c. During Assault
- d. During Consolidation
- e. Control

The principle of fire and maneuver is inherent and considered in every plan of attack.

This is the general plan of attack the second platoon leader decided to use. The platoon will move from the assembly area through the attack position. The order of march will be first, second and third squads in platoon column. The platoon leader will be with the second squad. This movement will be supported initially by one machinegun in position on Telegraph Hill. The other machinegun will accompany the maneuver element. The platoon will move in platoon column through the woods, changing into a platoon wedge to cross this open area and will send the first squad upon the knoll to clear it of any enemy forward security elements. Once the knoll is secure, the first squad will move off the knoll and join the other two squads in the assault. The machinegun which accompanied the maneuver element initially will support the assault from a position on the knoll. When fires from the machinegun on Telegraph Hill become masked, the machinegun will displace over a previously selected route to join in the assault, if possible, and to be immediately available as the platoon consolidates in preparation for an enemy counterattack. The machinegun on the knoll will displace forward when fires become masked and join in the consolidation.

There are a few phases during the conduct of this attack whereby the new rifles and machinegun and the new type radios within the platoon radio net provide the platoon leader greater flexibility and freedom of action. The assault is the most vital and critical phase of the attack and normally is the deciding factor between success or failure of the attack. The second platoon leader, in his planning, selected a "tentative" assault line. However, the "actual" assault line is selected by the platoon leader as he moves far enough along the route to observe the impact of supporting fire on the enemy. The platoon will lean into these supporting fires, taking advantage of their impact on the enemy before deploying to begin the assault.

Normally, during the assault, there is a decrease in firing; and the momentum of the attack is slowed by riflemen halting or hesitating as they change an eight-round clip. This has been greatly reduced by use of the M14 semi-automatic rifle with a 20-round magazine. Now the rifleman can deliver 2 1/2 times as much fire in the assault before reloading. Also, riflemen will carry a basic load of 100 rounds as opposed to 72 rounds with the M1 rifle. The M14 modified to include bipod is 7 1/2 pounds lighter and can be more easily handled by automatic riflemen in the assault.

As in this situation, one or both machineguns are normally placed in firing positions on the ground during the initial phase of the attack and then displaced forward by team echelon as the attack progresses in order to provide close fire support. The weight of the M60 machinegun is 10 pounds lighter than the M1919A6 machinegun, and its characteristics make it possible for the machinegunner to keep pace with attacking riflemen when required.

Frequently, the continuous fire support needed by the platoon leader at a critical moment in the assault on the objective has been interrupted by the overheating or burning out of a machinegun barrel. This has been eliminated by use of the "quick change" barrel. Here in our situation, the knoll provides excellent firing positions for machineguns supporting the assault. Sometimes, the terrain does not provide any firing positions for the machineguns to support the assault. In the past a gunner was said to be pulling a "John Wayne" when he wrapped a belt of ammo across his back and began walking and firing in the assault with a light machinegun. However, now a canvas magazine and a magazine bracket on the M60 machinegun gives the gunner the capability of joining in the assault by firing effectively from the shoulder and hip position without immediate assistance from another crew member.

With these new weapons the platoon leader has available greater firepower in all phases of the attack. To assist in controlling this added firepower and his platoon, the platoon leader has an organic platoon radio net utilizing the AN/PRC-6 radio. Although the AN/PRC-6 radio is not the ultimate-type radio for platoon use, it does increase the flexibility of the platoon and allow for dispersion. Assuming that the enemy will be capable of using area-type weapons against our assaulting forces, this necessitates greater dispersion between men in the assault. Presently, we are advocating no less than 10 meters between men; so you can see that a platoon assaulting with three squads forward would be spread approximately 300 meters and radio becomes the primary means of control. Radio will also alleviate somewhat the necessity for leaders to expose themselves to hostile fire during conduct of the attack. An example of this would be the situation here, where the first squad moves across the knoll, the second around the left flank, and the third around the right flank. Even though the platoon leader does not have visual contact with all squads, his radio greatly facilitates control and speeds up reaction time of the squad leaders moving into the assault.

I mentioned earlier that the AN/PRC-6 radio is not the ultimate platoon radio. Experience has shown that platoon and squad leaders must constantly keep the AN/PRC-6 close to their ear to monitor. With radio in one hand and his rifle in the other hand, the leader is not free to direct by arm and hand signals or fire his weapon, if necessary. The Ranger Department feels that an individual-type, light weight radio with a one mile range should be provided for the rifle platoon radio net. Recognizing this problem, the Ranger Department has been testing the AN/PRC-34 helmet radio, which gives the wearer the capability of constant monitoring and leaves both hands free to fire his weapon or give arm and hand signals. This helmet radio is an acceptable concept for this individual-type radio but should not be the only one considered.

In addition to the equipment mentioned, the platoon has radiac meters for monitoring radiation and a metascope for night operations.

So, we see that newly acquired weapons have resulted in greater firepower that is more flexible; and radios have greatly facilitated control, speeded up reaction time of squad leaders and allowed for greater dispersion between men and squads.

The present rifle platoon still can be used as a basis for small task force organization. It can be transported by personnel carriers or helicopters. It can seize and hold terrain by maneuvering in all types of terrain and climatic conditions. It can participate as an air-landed force, form an Infantry tank team in a mechanized attack or participate in Ranger-type operations.

No matter what the mode of transport or supporting fires utilized by the rifle platoon, it must fight on foot, utilizing fire and maneuver for the last few meters on to the objective to close with and destroy or capture the enemy.

Now we have the platoon on the objective, let's see what is required of the platoon if it becomes necessary to defend.

COMPANY DEFENSIVE AREA

Upon receipt of the order to occupy defensive positions the company commander determined that the second platoon, a forward platoon, will be responsible for the right portion of the company area, to include the Cyclone Road approach and the valley leading into the extreme right of the company area of responsibility (Figure 8).

The first platoon will be responsible for the left portion of the company area of responsibility, to include the Hollis Creek approach.

The third platoon, company reserve, initially occupies the combat outpost line, and upon withdrawal of the combat outpost, occupies positions in the company rear area.

The company commander has assigned a defensive area to the second platoon and will indicate the general trace of positions.

He will assign missions to supporting weapons located in the platoon area. In this case, the second platoon has one tank, one 106mm antitank rifle, one antitank guided missile and one short-range radar surveillance team located in its area of responsibility.

The battle group commander designates the location of artillery and 4.2-inch mortar barrages and the company commander the location of 81mm mortar barrages. Concentrations are planned by the platoon leader with the assistance of the forward observer from the weapons platoon of the company. The platoon leader is informed of the location and identification of other concentrations planned in his area.

PLATOON DEFENSIVE POSITION

The forward rifle platoon leader organizes his assigned area to take maximum advantage of the natural defensive strength of the terrain and the capabilities of the platoon weapons. He coordinates the employment of the platoon with the company plan of defense, with adjacent platoons and the nonorganic weapons employed within the platoon area. Normally the platoon will be unable to physically occupy all its assigned area but will organize the best defensive terrain in its area and cover the unoccupied areas by observation, fire, surveillance posts, obstacles and surveillance devices.

The rifle squads are deployed generally abreast along the military crest where the maximum fire can be delivered in the expected direction of enemy attack. Every effort is made to maintain unit integrity.

Squad sectors of fire overlap with adjacent squads or units to provide mutual support. Overlapping sectors of fire are assigned the riflemen within the squad. Automatic rifles are assigned sectors of fire that overlap and provide automatic rifle coverage of the entire squad sector.

The platoon machineguns are assigned missions to cover the most dangerous avenues of foot approach into the platoon position. The most desirable method of employment is as a pair, firing a final protective line and a sector. In this particular case you will note that the machineguns are employed singly, firing principal directions of fire within a sector. This method of employment will be most commonly found on the battlefield since there will be more foot approaches into the platoon position than there are pairs of machineguns. Then too, flanking, interlocking and grazing fire, the desirable characteristics of a final protective line, are not usually found.

The platoon rocket launcher is employed to provide close-in antitank protection for the platoon. It covers the most dangerous tank approach into the platoon position not covered by a more effective weapon.

The platoon leader locates his CP-OP where he can best control the actions of the platoon and observe the major portion of the platoon front. Since quite frequently there will be no one position from which this can be accomplished, the platoon leader will select a CP-OP that he will occupy and select a second observation post to be occupied by the platoon sergeant.

The platoon leader establishes security posts to his front in accordance with the security plan of the company commander. These are observation posts during daylight hours and listening posts at night. The security posts should be located within rifle supporting distance from the FEBA. Each post is manned by two or three men from the rifle squads and provided with communication to the platoon leader.

The T-1 night sighting device, an infra-red device which may be employed on any shoulder weapon in the platoon, is used to provide surveillance of the platoon area with particular emphasis on the gaps between units.

The forward rifle platoon must be capable of defending in any direction. For this reason supplementary positions are selected and prepared. These positions are normally within 200 meters of the primary positions. The platoon leader has the authority to move elements of his platoon into these supplementary positions.

The rifle platoon can physically occupy 400 meters, plus or minus. The rifle squad can physically occupy 100 meters, plus or minus, with 25 meters being added for each crew served weapon employed in the squad area.

The mission of the forward rifle platoon in defense is to stop the enemy fire forward of the battle area and to repel him by close combat if he reaches the battle area.

COMBAT OUTPOST LINE ORGANIZATION

Moving out to the combat outpost line, we find the third platoon leader has organized his position to provide early warning of the approach of the enemy and to deny him close ground observation of the battle area. Within his capability, he will also attempt to delay, disorganize and deceive the enemy as to the true location of the battle area.

The battle group commander prescribes the trace of the combat outpost line by the use of limiting points and in this case has made the company commander responsible for manning and controlling the combat outpost.

The combat outpost is organized in a series of outguards disposed laterally across the front. These outguards vary in size from a fire team to a reinforced squad.

Normal attachments to the platoon on the combat outpost line include tanks, assault weapons, 106mm antitank rifles, armored personnel carriers, radar surveillance teams and forward observer parties. Engineer support may be provided.

The outguards are organized on or near the topographical crest to achieve long-range observation and long-range fields of fire. The outguards should be mutually supporting.

In view of the fact that we do not intend to engage in close combat with the enemy on the combat outpost line, machineguns are assigned a principal direction of fire and a sector and will be employed on the bipod to allow a wider sector of fire.

Tanks and other antitank weapons cover likely avenues of armor approach and take the enemy under fire at extreme range.

Forward observers are positioned to provide overlapping sectors of observation. They assist the combat outpost commander with the planning, calling for and adjustment of indirect fires on the enemy.

Armored personnel carriers are attached to the combat outpost to provide mobility and firepower. Whenever possible the carriers are dug in and the mounted machineguns used in the conduct of the action. Care is exercised to prevent the carriers being exposed unnecessarily to tank fire, thus destroying the means of mobility provided.

The platoon leader selects a CP-OP from which he can best observe and control his platoon and observe the approaches to the front. He may well be required to move from one position to another, utilizing one of the armored personnel carriers during the conduct of the action. All available means of communication are used, including wire, radio and messengers. Communications are established laterally and to the rear.

The enemy is taken under fire at maximum range with all available weapons. Indirect fires are placed on known and suspected enemy targets and target areas. As the enemy approaches the combat outpost, weapons open fire as he comes within range. The combat outpost commander keeps the company commander informed of the situation. Before the combat outpost becomes engaged in close combat, it is withdrawn to the rear to delaying positions or through the FEBA. The withdrawal is coordinated closely with the company commander. In the event all communication is lost with the company commander, the combat outpost commander makes the decision to withdraw based on his mission and the situation. He informs the company commander of his withdrawal at his earliest opportunity. When the combat outpost has closed in rear of the FEBA, the platoon leader immediately prepares to accomplish the missions assigned the reserve platoon by the company commander.

COMPANY REAR AREA

The reserve platoon has been assigned the mission of preparing and occupying a position to block an enemy penetration down Cyclone Road and along the ridge running southwest from Hill 623. The company commander has employed two tanks in the reserve platoon area to assist in this mission.

The reserve platoon position is organized in much the same manner as the forward platoons, with the exception of the employment of the machineguns, which are always employed singly and are assigned principal directions of fire and a sector of fire, or a sector of fire only.

The reserve platoon also selects supplementary positions to provide all-round defense.

Additional missions that may be assigned the reserve platoon are protecting the company flanks and rear. In this situation the platoon has prepared and is occupying one position which blocks the penetrations designated by the company commander and will prepare and be ready to occupy other positions to protect the company flanks and rear.

The reserve platoon may also be assigned the mission of establishing surveillance and providing security in the company rear area. This is accomplished by establishing observation posts and listening posts and by patrols.

The reserve platoon is also assigned the mission of participating in a counterattack. The company commander, with the assistance of the reserve platoon leader, prepares counterattack plans for each likely area of penetration. A counterattack is a limited objective attack designed to destroy or eject the enemy from an area of penetration or to regain lost portions of the battle area.

The essential elements of a counterattack plan are an objective, a line of departure, routes, formations to be used and a fire support plan.

SUMMARY

The reserve platoon provides flexibility to the company defense.

The basic considerations of defensive combat and the missions assigned the rifle platoon in defensive combat have not changed. Greater gaps are accepted between platoons in order to reduce vulnerability to nuclear attack. The introduction of new weapons and equipment materially assist the platoon in accomplishing its mission with these wider gaps.

Section III. NEW DEVELOPMENTS IN PHYSICAL TRAINING

CAPTAIN PAUL E. PENCE

Instructor, Ranger Combat Conditioning Committee, Ranger Department

The physically tough and aggressive soldier equipped with the knowledge of tactics and his weapon has always been the commander's primary key to success. Tomorrow's battlefield, with its requirements of greater dispersion, deeper objectives and violent small unit actions will cause even greater reliance on the soldier's mental and physical abilities and emotional fitness.

Today we will discuss a means of determining the physical combat readiness of an individual, the physical combat proficiency test, and a method of instilling confidence and an aggressiveness in him through the use of pugil equipment during bayonet training.

PHYSICAL COMBAT PROFICIENCY TEST

How do we determine a unit's physical combat proficiency? The two major means available are observation and testing. By observing performance of such actions as marching, running, or assaulting an objective, it is possible to get an indication of the physical condition of the unit. This is a time honored method, but it has several limitations. Although individual cases of muscular flabbiness and overweight can be detected, care must be used in its application because it consumes much time and is often unreliable in the analysis of the condition of large groups of personnel.

The most accurate means of determining physical fitness is through testing. In the past, in fact since 1944, our means of measuring physical condition was through the use of the physical fitness test. This test, as you remember, requires the participant to execute pullups, squat jumps, pushups, situps and a 300 yard shuttle run. No major revision has been made on the physical fitness test since its inception with the exception of the scoring table in 1957. The test objective is to determine the strength and endurance of the major muscle groups of the body. Although valid and successful with respect to this objective, the test has several undesirable characteristics. Some of these are: The test events lack combat relationship; excessive human judgment is required in scoring; each event tests the participant to the point of exhaustion as he attempts to obtain a passing score; and test events are repetitious and monotonous.

These unfavorable characteristics were considered in the development of the physical combat proficiency test to insure that they would not be repeated. The project to establish this test was initiated in July 1958. After extensive field testing, analysis of results and thorough examination of returned questionnaires, the adoption of the physical combat proficiency test seems near at hand. This new test is based on such basic combat skills as running, climbing, throwing, jumping and crawling; it tests the soldier's agility and coordination as well as his muscular strength and endurance. Human judgment in scoring is kept to a minimum as scores are obtained by measurements of time and/or distance; form or manner of performance is not a major factor in the attainment of scores. Test events are neither repetitious, as are pushups or squat jumps, nor do they test the participant to the point of exhaustion. Some construction of facilities is required; however, expensive facilities are unnecessary.

The events of the physical combat proficiency test are: the 40 yard low crawl; horizontal ladder; dodge, run and jump; grenade throw; and a one mile run.

The portion of the test conducted first is the 40 yard low crawl. Examinees are required to take a prone position, their elbows on the starting line. On the command "GO" they crawl the length of the course, touch the end line, spin on their stomachs and return to the starting line. This, a timed event, tests the soldier's ability to crawl and is a measure of his endurance.

After the unit has been tested on the 40 yard low crawl, it is split, one half for the grenade throw event, the other half to the area where the horizontal ladder and dodge, run and jump is conducted. The grenade throw event measures the ability to throw accurately and for distance. Examinees are taken for a close look at the target area, given a demonstration and then moved to the throwing line which is ninety feet from the center of the target. Each examinee throws seven grenades, two for practice and the last five for record. The prone position is the starting position; examinees rise to a kneeling position, throw and immediately return to the starting position. Targets are scored as follows: eight points for hits in the inner circle, seven points for hits in the inner middle circle, six points for outer middle circle, five points for outer circle, and one point for each hit inside the square but not in the circle area.

The horizontal ladder measures general body coordination and shoulder girdle muscle development. Here the examinee begins with both hands on the first rung. On the command "GO" he moves forward by alternating hands on successive rungs. When the end of the ladder is reached, he turns and starts back making as many round trips as possible in the time limit of one minute. The score is based on the number of rungs negotiated within the one minute period. There is a need for strength in the arms and shoulders and body coordination.

The measure of the soldier's ability to change direction rapidly and jump is determined by the dodge, run and jump event. There are obstacles with directional arrows and the ditch between the obstacles. At the starting signal, the examinees, following the directional arrows, run between the first obstacles, jump the ditch, run the last obstacles and return. Two circuits are required for completion. The total distance involved is only fifty-eight yards and therefore is not a test of endurance. The score is determined by measuring the time taken to negotiate the course.

The last event is the one mile run. The course for this event is a quarter mile oval laid out on any piece of fairly level ground. Two groups of 36 examinees each are run simultaneously from opposite sides of the oval. Each soldier wears a numbered card. Different colored card backgrounds separate the running groups to facilitate scoring. This event tests endurance and ability to make a prolonged run.

The physical combat proficiency test can be administered to 200 troops in a period of 2 1/2 to 3 hours. Properly administered, it will give us a measure of the unit's or individual's physical ability to perform in combat.

BAYONET

To go with this physical ability our fighting men must have a fighting, aggressive spirit which enables accomplishment of the mission under the most adverse conditions. A traditional and effective builder of this fighting spirit is the bayonet. Bayonet training by competent, aggressive instructors can build confidence, aggressiveness, agility, coordination and endurance. A training aid which will assist in building these qualities during bayonet training is pugil equipment. You can readily see an element that has long been missing from our bayonet training in the past, "body contact," can now be a reality. The rifle with bayonet, even when thickly padded, can be a lethal weapon. Because of this, our bayonet training has consisted of either formal drills widely separated from a human opponent, or in bayonet "attacks" against targets of wood and metal. Now through the use of pugil equipment, our soldiers can fight a live, thinking, moving target that can not only be hit, but can hit back! Required equipment includes a pugil stick; protective helmet with face mask; hockey, lacrosse, or boxing gloves; and a protective cup.

The pugil stick is the approximate length and weight of a rifle with bayonet attached. A hard wood stick (oak or hickory), two inches in diameter and forty inches long, is padded on each end. Padding on this stick is polyfoam covered with salvaged shelter half material. Cotton from salvaged

mattresses, sponge rubber or any other resilient material may be used to stuff the pads should polyfoam not be available. The helmet is a standard rugged, well padded, football type. Protection to the bayonet fighter's face is provided by a mask locally constructed since commercial models available lack the strength or cover desired. Gloves provided may be any of the types previously mentioned but must be sufficiently padded to prevent damage to hands when hit by the hardwood stick. The groin protective cup should be of good quality, and its reason for existence is self-explanatory.

Although pugil equipment assists in the development of the fighter, formal training of the basic positions and movements must precede its use. The positions and movements taught with the rifle and bayonet are used later with pugil equipment.

After learning the basic positions and movements, the trainee uses his skill against a live target. Following a coach and pupil drill where the pupil strikes blows at his coach with the pugil stick and each develops more power and skill, the trainee runs a "live" thrusting dummy course. Each of the "targets" is instructed to shout the blow to be delivered as the bayonet fighter approaches, block his blow, and briefly critique the fighter's performance. When the first fighter reaches the end of the course, he becomes a "target;" the first "target" then becomes a bayonet fighter.

Our bayonet fighter next finds himself running over a longer distance in rougher terrain against moving and surprise targets. This step is the "live" pugil assault course. This course supplements the bayonet assault course by placing similar demands on the bayonet fighter while using a live target. On this course a portion of the group becomes targets while the remainder assault. The target and assault elements then change.

The bayonet fighter is now ready to match his skill against a live opponent. In the past this type of training was received only in combat. Through participation in individual bouts, the bayonet fighter is taught the importance of aggressiveness and confidence. Bouts are stopped on the first killing blow, and a short critique is delivered.

To be victorious in future combat, the commanders "key" must unlock the door to victory. The physically tough, aggressive soldier who can take anything the enemy and terrain can offer and still come up fighting is all important. Better means of determining his fitness and superior methods of developing him mentally, physically and emotionally must continually be developed and exploited.

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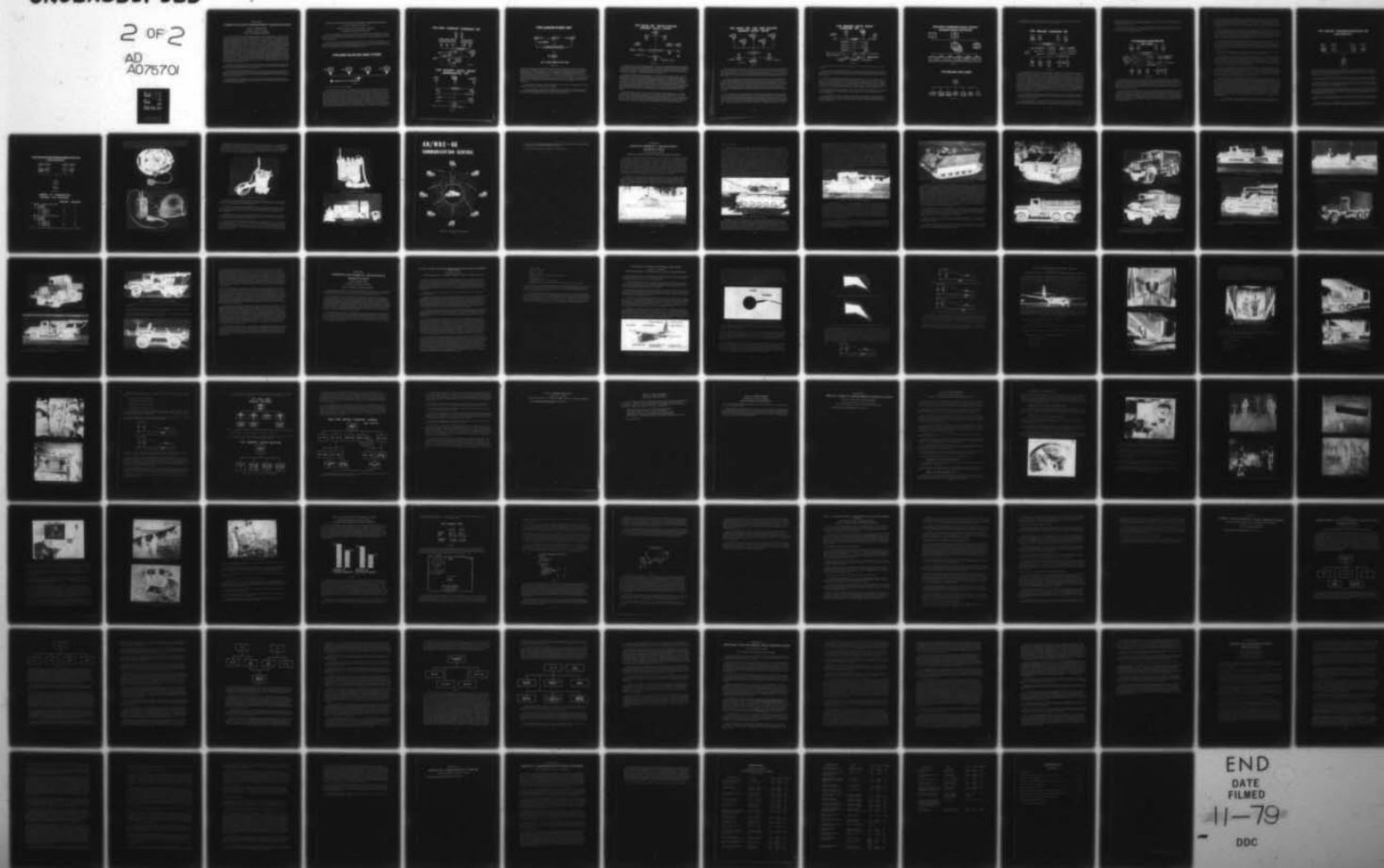
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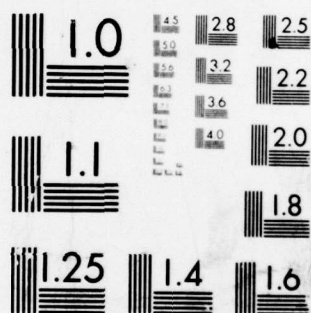
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CHAPTER 5

COMMUNICATION DEPARTMENT PRESENTATION

Section I. INTRODUCTION

COLONEL GLENN H. GARDNER

Director, Communication Department

The new concepts of tactical operations emphasize greater dispersion, in both width and depth, greater fire power, and high speed mobility. Because of these characteristics, our demands for instantaneous and continuous communication have increased. If the battlefield commander is to effectively utilize the fire power which is available, and if he is to move with the frequency dictated by our operational concepts, he must have a communication system which is immediately responsive to his will. He must be able to call for fire support at the time that he wants it and at the place he wants it. Available fire power and means of mobility are of little value if the commander does not have a means of communication which is instantaneously responsive, reliable and flexible. The means must be complete, and the required personnel and equipment available. In the past the Infantry has not had the communication which was needed on the battlefield. This was true in World War II and Korea. Our search for improved communications is continuous. We must develop and state our requirements with timeliness; and as new means are developed, we must rapidly integrate them into our system and educate ourselves in their use. Our training must be thorough; and for the Infantryman of today, communication cannot be considered a technical subject. He must be able to communicate as easily as he reads his map, drives his vehicle or fires his weapon. Communication is the voice of command and that voice must be heard.

I extend a hearty welcome to you from all members of the Communication Department and request that you visit the department at your convenience. We will consider it a privilege to answer your questions and aid you in any way we can.

The Communication Department portion of this conference will be presented in two parts. The first part will be devoted to battle group and Infantry division brigade communication systems. The second part will bring you up to date on developments in new communication equipment designed for Infantry use.

May I present to you Captain Epps, of the Communication Department, who will discuss with you the Infantry division battle group and brigade communication systems and the status of new communication equipment.

Section II. INFANTRY BATTLE GROUP AND BRIGADE COMMUNICATION SYSTEMS

CAPTAIN FERDINAND Q. EPPS, JR

Chairman, Message Center Subcommittee, Operations

Committee, Communication Department

As a result of experience with the draft "D" Table of Organization and Equipment, changes have been made and published in the approved "D" Series Tables of Organization and Equipment which became effective 1 February 1960. Many of these changes concern communication equipment and personnel.

The first of these changes concerns the rifle platoon. Five sound powered telephones, TA-1/PT, now organic to each rifle platoon headquarters will provide wire communication between the platoon headquarters, the three rifle squads and the weapons squad in those tactical situations where wire communication at this level is appropriate (Figure 1).

TYPE RIFLE PLATOON WIRE SYSTEM

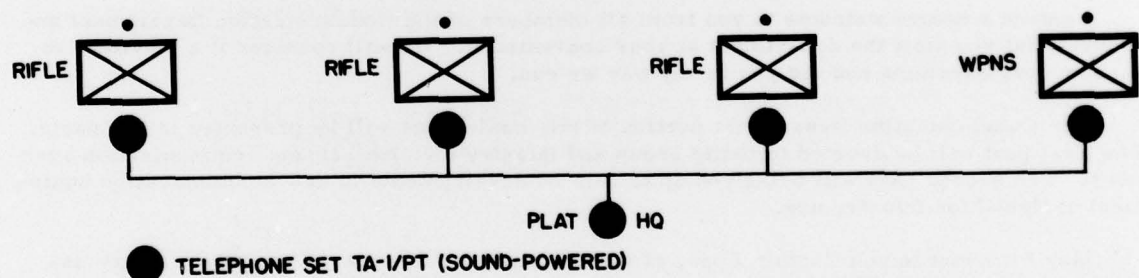


Figure 1.

Let's now move to the rifle company.

The executive officer of the rifle company has been provided with a 16 kilometer range radio, AN/VRQ-3, which is identical to the radio used by the company commander. This radio will permit the executive officer to rapidly assume command of the company in the event of the loss of the company commander and the destruction of his equipment. The AN/VRQ-3 radio has the capability of receiving and transmitting on two different frequencies at the same time. One half of the executive officer's radio will be used in the company command net and the other half will be used in the battle group administrative net as indicated in Figure 2. Formerly the rifle company station in the battle group administrative net had been a five to eight kilometer range radio, AN/PRC-10. The addition of the AN/VRQ-3 radio for the executive officer to operate in the battle group administrative net will permit the rifle company to use the AN/PRC-10, formerly used in the administrative net, for utility purposes. The battle group administrative

TYPE RIFLE COMPANY COMMAND NET

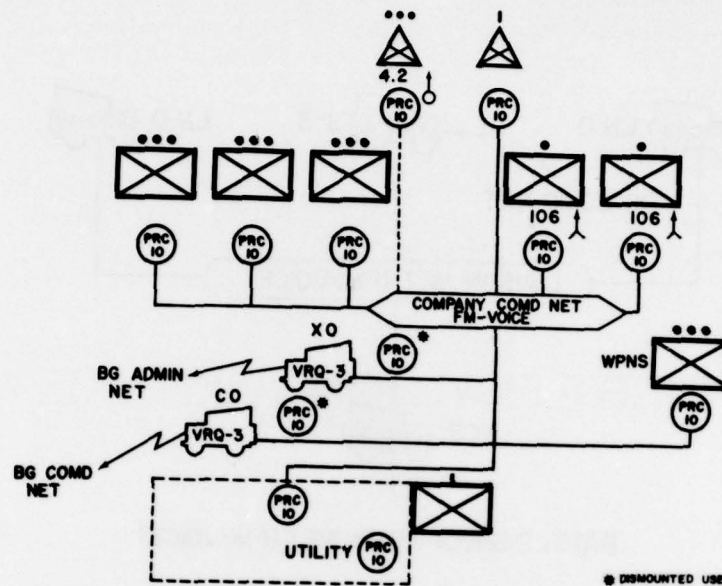


Figure 2.

TYPE INFANTRY BATTLE GROUP ADMINISTRATIVE NET

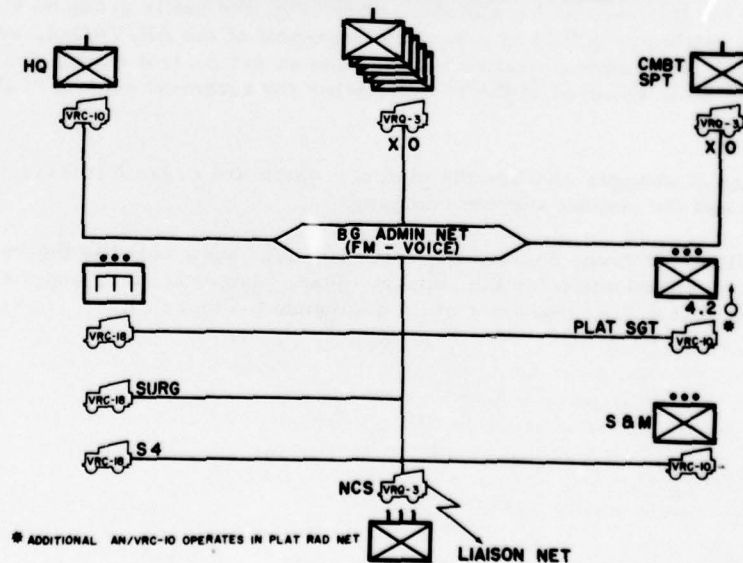


Figure 3.

TYPE LIAISON RADIO NET

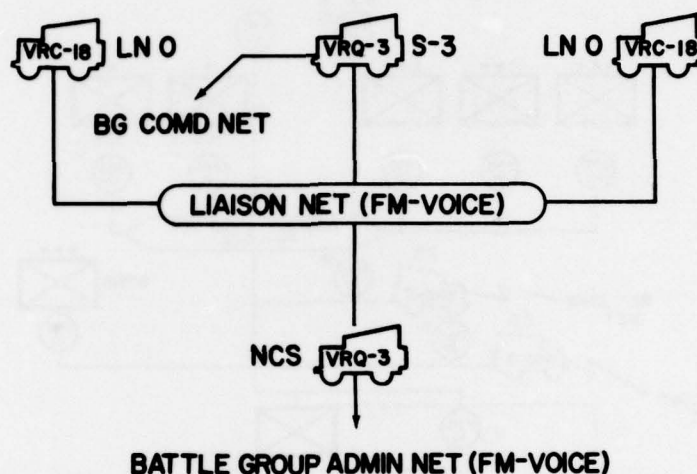


Figure 4.

net is usually required to operate over the same distances that the battle group command net operates. The addition of an AN/VRQ-3 radio for the rifle company executive officer provides 16 kilometer range radio equipment for use throughout the battle group administrative net as shown by Figure 3. As indicated by Figure 3, a change in the employment of the radio used as net control station for this net has been made. Formerly, the battle group S3 was the net control station for the battle group liaison net. Now, one-half of the AN/VRQ-3, used as net control station for the battle group administrative net, is used as net control station for the battle group liaison net; thus the S3 is relieved of the responsibility for technical control of the liaison net (Figure 4).

The next series of changes concern the platoons which are organic to headquarters and headquarters company and the combat support company.

Four 5 to 8 kilometer range radios, AN/PRC-10, have been added to the reconnaissance platoon to provide communication for the support squad, platoon leader, and the elements of the scout section in the platoon command net while dismounted (Figure 5).

TYPE RADIO NET, RECON PLATOON INFANTRY BATTLE GROUP

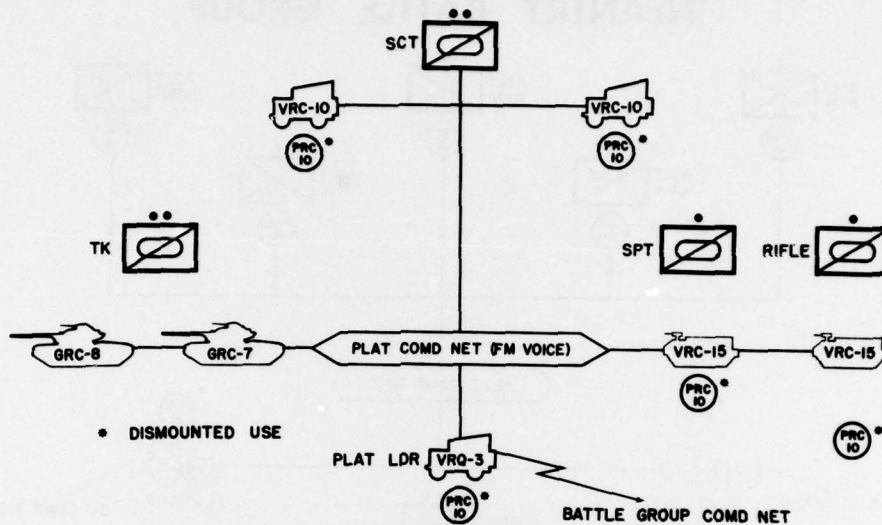


Figure 5.

The platoon leader and the platoon sergeant of the assault weapons platoon are now provided with 16 kilometer range radios, the AN/VRQ-3. The platoon leader has a requirement to operate in the platoon command net and the battle group command net simultaneously. The AN/VRQ-3 provides this capability. The platoon sergeant also has a requirement to operate simultaneously in the platoon command net and the administrative net (Figure 6).

The engineer platoon leader does not have a command net to control his squads as does the platoon leader in the division engineer battalion. He is provided a 16 kilometer range radio, AN/VRC-18, to operate in the battle group administrative net and an AN/PRC-10 for dismounted use. The battle group commander and staff officers must keep the communication capability of this platoon, or absence of communication capability, in mind when assigning missions. FM 7-21, dated February 1960, shows that each engineer squad has an AN/PRC-10 radio. This is also true of other manuals pertinent to Infantry. When the "D" Series TOE's came out in February of 1960, no radios were provided for the engineer squads. It is felt that the engineer squads will be provided AN/PRC-10 radios from the battle group communication platoon when the need arises.

With these changes in mind, let's now consider the battle group command net. The battle group executive officer has been provided with a 16 kilometer range radio, AN/VRC-18. This radio gives him the capability of operating in one net and monitoring another net. The executive officer's radio is shown by Figure 7 in the battle group command net; however, as the battle group executive officer is primarily concerned with coordination of the battle group staff, he will use his radio in the battle group radio net which will best enable him to accomplish his duties.

TYPE RADIO NET, ASLT WPN PLATOON INFANTRY BATTLE GROUP

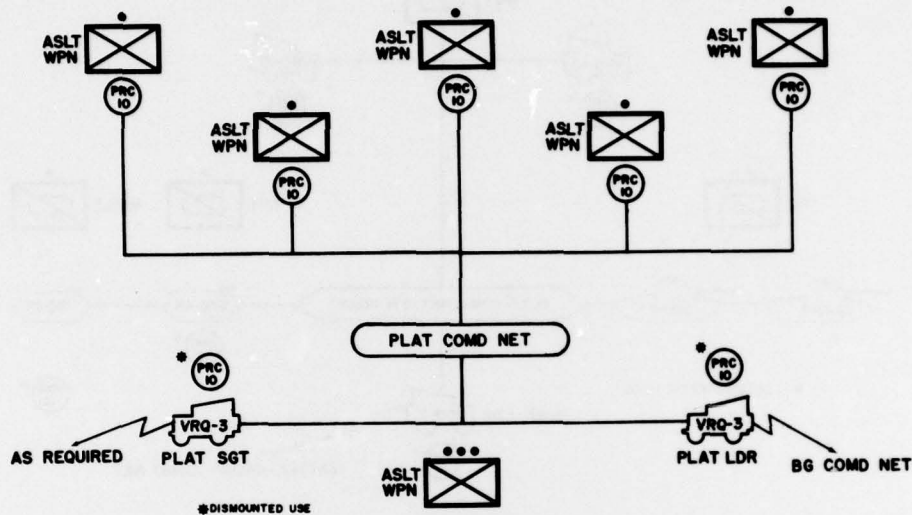


Figure 6.

Let's turn our attention to personnel changes. Personnel of the battle group communication platoon have been given new job titles and in some cases grades have been changed; however, no loss of personnel has occurred. One change that has occurred, which I am sure will be of interest to Infantry instructors, concerns the battle group communication officer and communication platoon leader. These individuals are both Infantry officers rather than Signal Corps officers.

A concept of employment of communication that I would like to bring to your attention concerns the alternate battle group command post. The alternate battle group command post is provided with a switchboard, SB-22 from the battle group communication platoon. This switchboard is connected by two lines to the battle group switchboard. A phantom circuit may be constructed using the two metallic lines already installed so as to permit a direct telephone line between the battle group S3 and the alternate battle group command post operations section. This allows the alternate battle group command post to monitor all incoming calls to the battle group S3.

The battle group area support platoon of the forward support company, division signal battalion has undergone an organizational change. The radio terminal and carrier sections which provide radio relay (VHF) communication to division and adjacent unit headquarters have been removed from the battle group area support platoons and placed in a separate radio terminal and carrier section. This change will not affect the concept of employment, since a terminal and carrier team will be attached to each area support platoon in support of a battle group (Figure 8).

TYPE INFANTRY BATTLE GROUP COMMAND NET

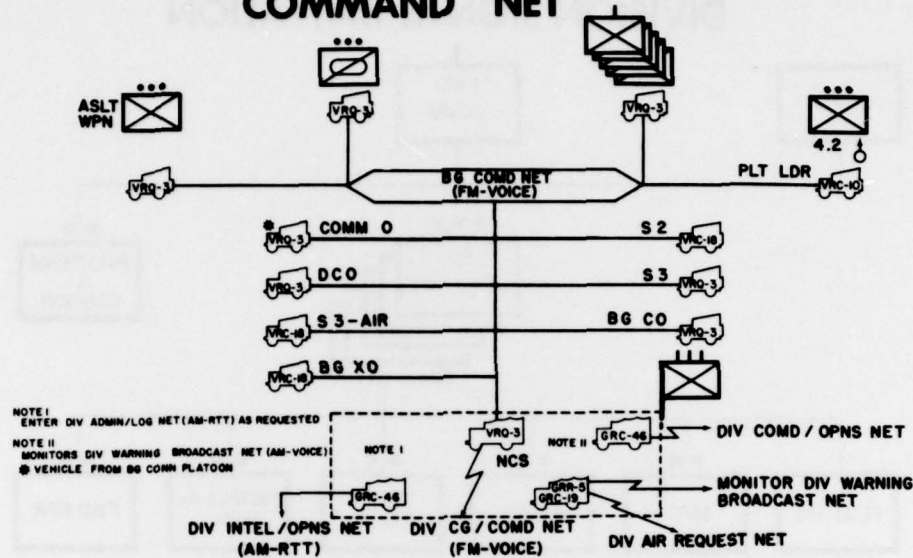


Figure 7.

Let's mentally put the battle group aside and concern ourselves with the Infantry division brigade.

The mission of the brigade headquarters is to command, control and supervise operations of subordinate and attached elements of the division; to function as an alternate division command post; to function as command headquarters for a task force; or to supervise major activities of the division.

The type Infantry division brigade task force illustrated by Figure 9, is similar, on a reduced scale, to the organization of the Infantry division. To carry out the missions previously outlined, the Infantry division brigade is provided a limited amount of communication equipment organic to the brigade headquarters section, headquarters and headquarters company, Infantry division, and receives additional communication support from the command operations company of the division signal battalion, specifically from brigade headquarters operations platoon.

The communication equipment organic to the brigade headquarters section consist of two 16 kilometer range radio sets, AN/VRC-10, mounted separately in 1/4-ton trucks, and one receiver, AN/GRR-5.

The following radio equipment is organic to the brigade headquarters operations platoon: one 16 kilometer range receiver transmitter, AN/VRC-10; one amplitude modulation radio receiver, AN/GRR-5; one 16 kilometer range radio set, AN/VRQ-3; and one AM, radio-teletypewriter, AN/GRC-46.

FORWARD COMMUNICATIONS COMPANY DIVISION SIGNAL BATTALION

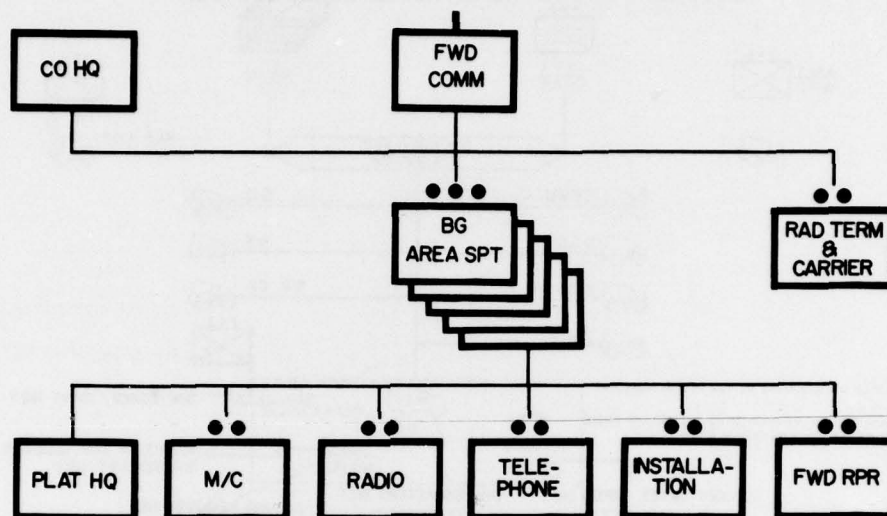


Figure 8.

TYPE BRIGADE TASK FORCE

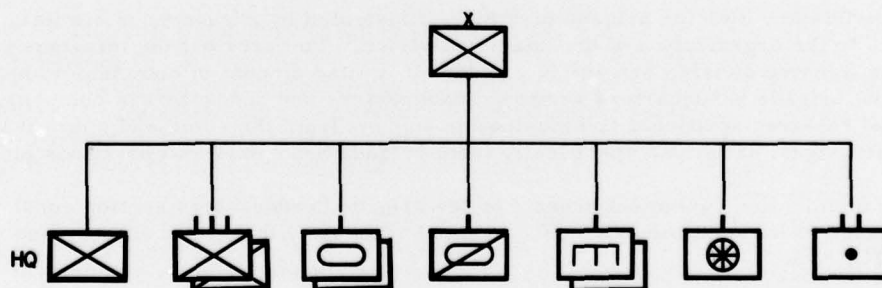


Figure 9.

Making the best use of radio equipment authorized, the type brigade headquarters radio communication systems shown by Figure 10 can be organized.

TYPE BRIGADE COMMAND NET

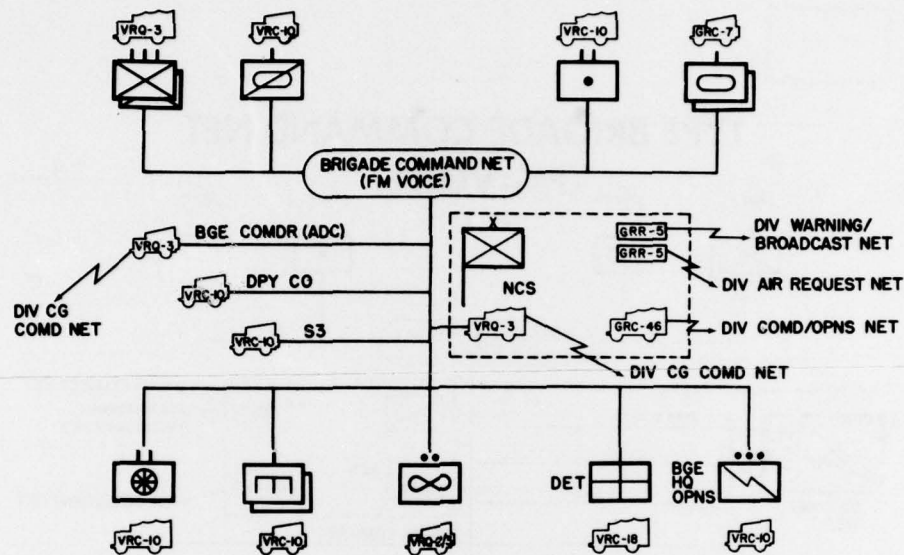


Figure 10.

As illustrated by Figure 10, the deputy brigade commander and the brigade S3, using two of the three 16 kilometer range radios, AN/VRC-10, can communicate in only one net, and that should be the brigade command net. The remaining 16 kilometer range radio set, AN/VRC-10, is used by the platoon leader of the brigade command operations platoon to provide his link into the brigade command net. The AN/VRQ-3 provided by the brigade headquarters operations platoon is used as the net control station for the brigade command net and as the subordinate station in the division commanding general's command net at the brigade command post. The radio-teletypewriter, AN/GRC-46, provided by the brigade headquarters operations platoon is shown employed in the division command/operations net. If it were employed in an internal AM radio net, brigade's contact with the division command/operations net could not exist. The two AN/GRR-5 radios, one organic to the brigade headquarters section and one organic to the brigade headquarters operations platoon, may be used to monitor the division warning broadcast net and the division air request net, as indicated.

This is a type radio communication system organized using the radio equipment available and utilizing all of the radio equipment organic and in a supporting role, provided by TOE, for use by the brigade headquarters.

The brigade headquarters cannot transmit in the following division radio nets without using the one radio-teletypewriter, AN/GRC-46, in a multiple role: the division air request net, the division intelligence operations net, and the division administrative and logistical net. Nor can

the brigade operate the following internal radio nets which will be required when operating over the extended distances visualized on today's battlefields: a brigade command operations net and a brigade intelligence net.

The current concept of communication augmentation of the brigade headquarters by the signal battalion is unsatisfactory, as the required equipment in the amounts necessary is not available within the division signal battalion.

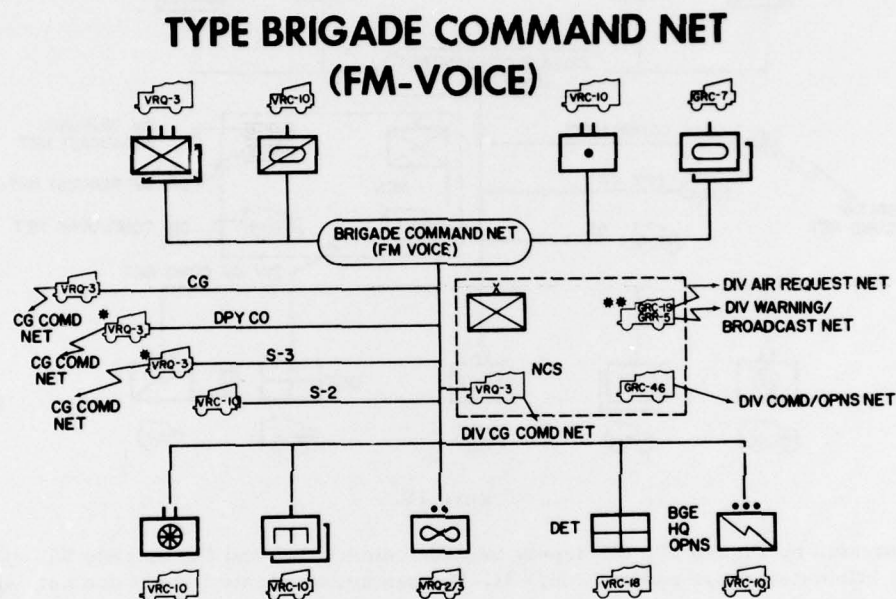


Figure 11.

Shown on Figure 11 is a type radio communication system that will provide the radio communication for efficient operation of the brigade. The radios shown for the deputy brigade commander and the brigade S3, and the AN/GRC-19 shown in the division air request net must be added to existing Tables of Organization and Equipment. All other radio equipment shown on this figure is organic to the elements which support the brigade headquarters or the element comprising the brigade task force.

Tactical FM radio equipment must be provided to permit the brigade commander, the deputy brigade commander and the brigade S3 to operate simultaneously in both the division commanding general's command net and the brigade command net. Each of these individuals should be provided with 16 kilometer AN/VRQ-3 radios, as illustrated by Figure 11. The brigade S2 has a requirement to operate in the brigade command net so he may stay abreast of the tactical situation. This requirement can be fulfilled by using one of the 16 kilometer range radios, AN/VRC-10, already supplied.

Let's now consider the brigade's radio links with division. Increased emphasis on fast moving and widely dispersed formations requires the brigade to operate over distances greater than existing tactical FM radio equipment provides. The brigade, therefore, requires an AM radio capable of operating over extended distances in the division command/operations net. The single radio-teletypewriter, AN/GRC-46, now provided can be used in this net, as illustrated on Figure 11.

Subordinate elements that may be attached to the brigade have the capability to request tactical air support from division headquarters. If the brigade commander is to effectively control his subordinate elements, he must have radio equipment that will enable him to monitor and negate such requests, if appropriate, and to initiate requests from brigade headquarters, when required. This requires the addition of an AN/GRC-19 to the radio equipment now supplied the brigade headquarters to be used in the division air request net.

As a major subordinate element of the Infantry division, the brigade headquarters has the same requirement for warning of nuclear attack, mechanized attack, airborne attack or air attack as do all major elements of the division. This requirement can be fulfilled by employing one of the radio receivers, AN/GRR-5, already provided, in the division warning/broadcast net. This radio receiver should be mounted in the truck with the AN/GRC-19 radio used in the division air request net.

Having offered a solution for the brigade command net and brigade's radio links with division, let's now turn our attention to internal radio sets required by brigade.

A requirement exists to provide contact between the operations section in the brigade headquarters command post and the operations section in the command post of subordinate units over distances which are greater than that provided by current FM radio equipment. To establish a brigade command/operations net, one radio-teletypewriter, AN/GRC-46, must be added to the radio equipment now supplied the brigade headquarters. This would permit establishment of the type brigade command/operations net shown by Figure 12.

With a nuclear capability a constant threat in modern warfare, a requirement exists for a separate brigade intelligence net to expedite the collection and processing of information and the timely dissemination of intelligence to subordinate units. To burden the brigade command/operations net with this type traffic would reduce its efficiency. One radio-teletypewriter, AN/GRC-46, should be added to the radio equipment now supplied the brigade headquarters to establish the type brigade intelligence operations net shown by Figure 13.

The brigade headquarters command post is integrated into the division area communication system by means of radio relay (VHF) equipment, as are other subordinate units of the Infantry division. The radio relay equipment must provide both voice and teletype circuits between brigade headquarters and other divisional elements. The radio terminal and carrier section of the command operations company currently provides the radio relay equipment required to integrate the brigade headquarters into the division area communication system. However, this equipment is not organic to the brigade headquarters operations platoon but is habitually required. The minimum requirement for radio terminal and carrier (VHF) facilities includes the capability to provide circuits to two battle groups and higher headquarters simultaneously. To accomplish this requirement for the brigade, the brigade headquarters operations platoon should have a radio terminal and carrier section which consists of three radio terminal sets, AN/MRC-69, and allied equipment.

Wire equipment presently authorized brigade, organic to the brigade headquarters operations platoon, will permit brigade headquarters to have a wire system similar to that of the

TYPE BRIGADE COMMAND/OPERATIONS NET (AM-VOICE-RTT)

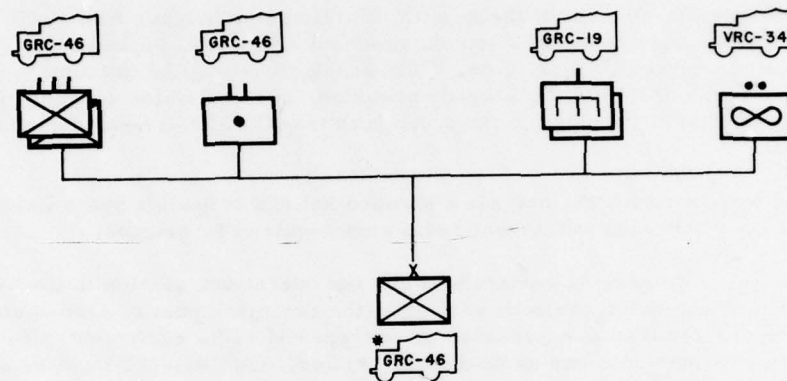


Figure 12.

division headquarters. Integration into the division area communication system by means of the radio relay (VHF) equipment previously mentioned will provide the voice circuits normally associated with wire systems, inasmuch as it is not contemplated that a wire system will be employed between brigade and subordinate units.

Message center facilities and cryptographic and teletype service for the brigade headquarters are provided by the message center section of the brigade headquarters operations platoon.

With the addition of the equipment we have discussed, there must also be personnel added to operate this equipment. To add equipment without personnel would only magnify existing problems without satisfying the communication problem.

A summary of communication equipment and personnel changes that must be made to provide adequate communication support for the brigade headquarters section; headquarters and headquarters company; Infantry division; and brigade headquarters operations platoon, division signal battalion is listed on Figure 14.

Of great concern to all Infantry officers is the development of new communication equipment for Infantry use. I would like to familiarize you with the present status of some of this equipment.

The helmet mounted radio, AN/PRC-34, and the belt mounted model, AN/PRC-36, were tested during the early part of 1959 at Fort Campbell, Kentucky (Figures 15 and 16). The

TYPE BRIGADE INTELLIGENCE/OPERATIONS NET (AM-VOICE-RTT)

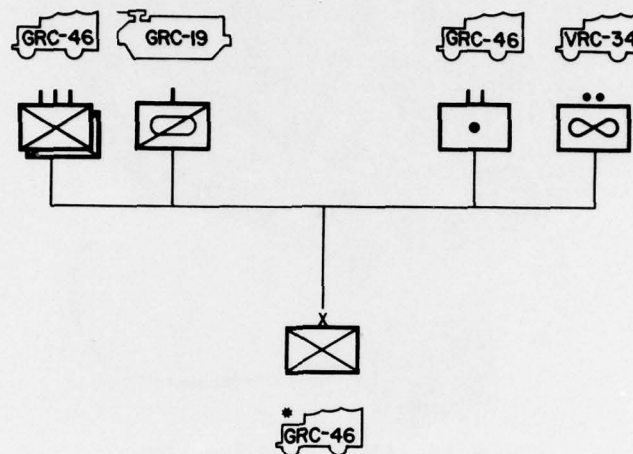


Figure 13.

SUMMARY OF COMMUNICATION EQUIPMENT AND PERSONNEL

	<u>ADDITIONS</u>	<u>DELETIONS</u>
a. BRIGADE GQ SECTION (TOE 7-2D)		
(1) PERSONNEL	0	0
(2) EQUIPMENT		
(a) AN/VRQ-3	2	0
(b) AN/VRC-10	0	1
(c) AN/GRR-5	0	1
b. BRIGADE HQ OPNS PLAT (TOE II-7D)		
(1) PERSONNEL	31	0
(2) EQUIPMENT		
(a) AN/GRC-19	1	0
(b) AN/GRC-46	2	0
(c) AN/MRC-69	3	0

Figure 14. Summary of Communication Equipment and Personnel Changes.

purpose of the test was to ascertain distribution and employment of these radios, their effect on command and fire control, and an overall evaluation of their usefulness tactically. The final report of the test revealed very favorable and enthusiastic comments from platoon and squad leaders. The report also revealed that use of these individual radios reduced exposure, increased the span of control and speeded up reaction time.

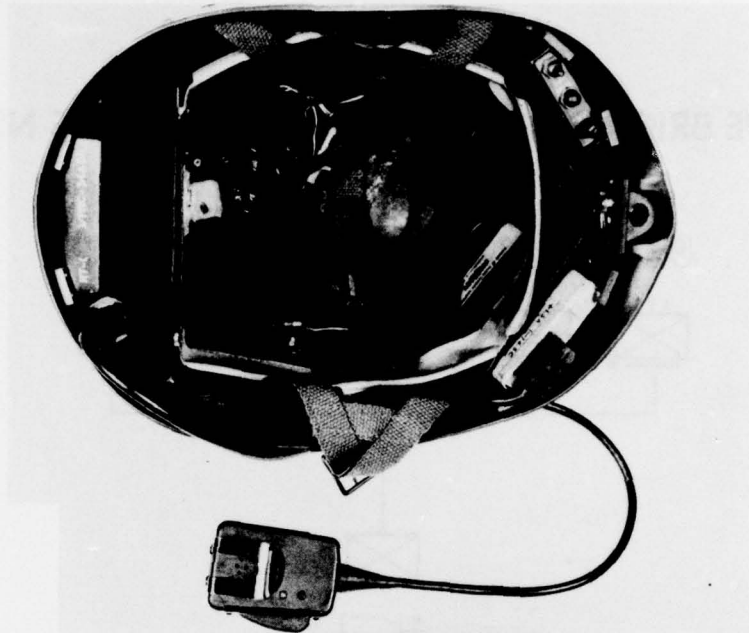


Figure 15. AN/PRC-34 Radio Set.

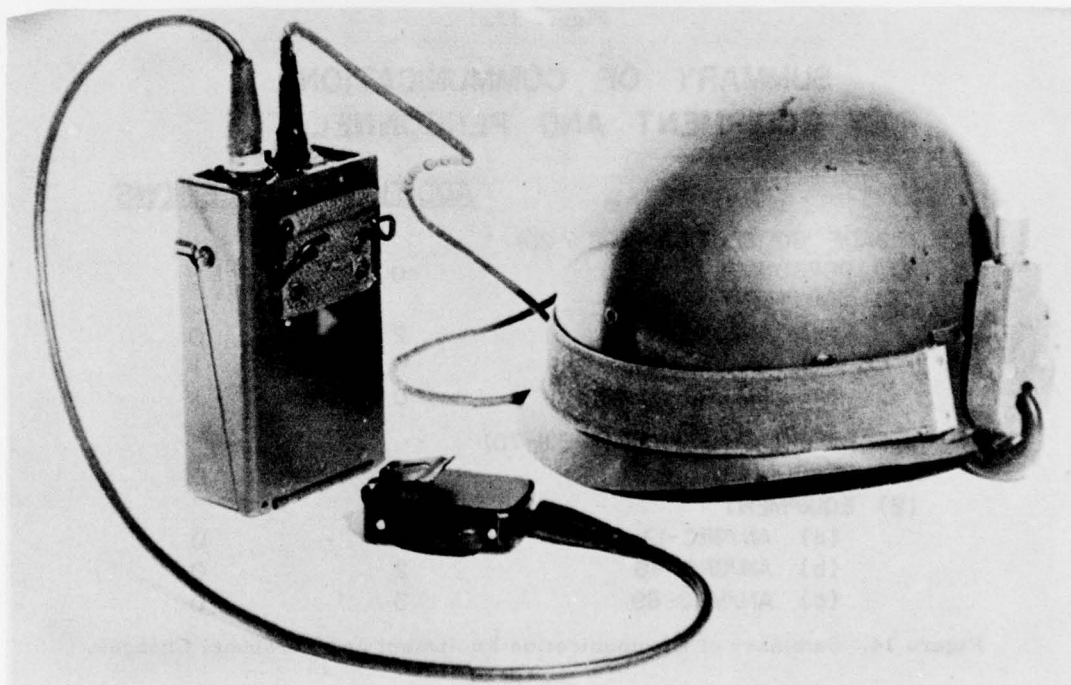


Figure 16. AN/PRC-36 Radio Set.

No doubt you have heard of the new family of radios. The AN/PRC-35 was originally scheduled to replace the AN/PRC-6; however, the excessive weight and range of this set makes it undesirable for use at squad level. Recent tests reveal that the AN/PRC-35 will weigh 12 pounds and will have a range of 5 kilometers. To provide the platoon with a lighter set, USCONARC has directed that a new 1 1/2 kilometer range set be developed that will be lighter than the AN/PRC-35 for use at the platoon level (Figure 17).

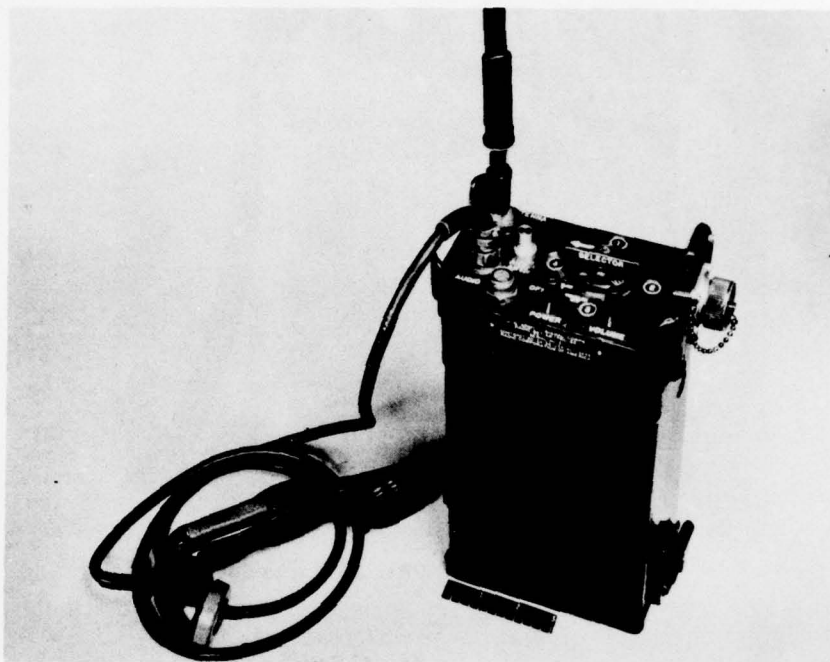


Figure 17. AN/PRC-35 Radio Set.

The AN/PRC-25 will replace the AN/PRC-8, 9, and 10 currently used by Armor, Artillery and Infantry. The AN/PRC-25 originally had an additional or auxiliary receiver. The auxiliary receiver has been removed from the set (Figure 18).

The AN/VRC-12 would replace the AN/GRC-3 through 8, vehicular mounted series of radios. The basis of issue for this equipment to Infantry units was submitted by the United States Army Infantry School in April of this year; however, the availability of this equipment is not known (Figure 19).

The last item, the radio central, AN/MRC-66, a radio system operating on the subscriber-to-central principle, being developed to supplement radio and wire systems at battle group level, is scheduled for service testing this year (Figure 20).

We have discussed the major changes in the battle group communication systems, the communication equipment and personnel presently authorized for support of the Infantry division brigade headquarters and presented a plan for an increase in communication equipment and personnel for the brigade headquarters that would allow it to operate with maximum efficiency. We also discussed, very briefly, the status of some of the new communication equipment under development for Infantry use.



Figure 18. AN/PRC-25 Radio Set.

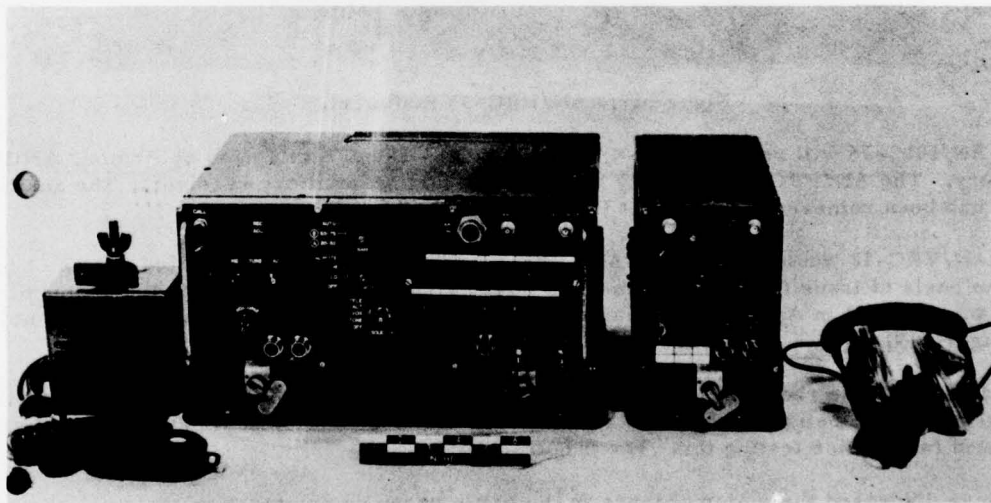


Figure 19. AN/VRC-12 Radio Set.

AN/MRC-66

COMMUNICATION CENTRAL

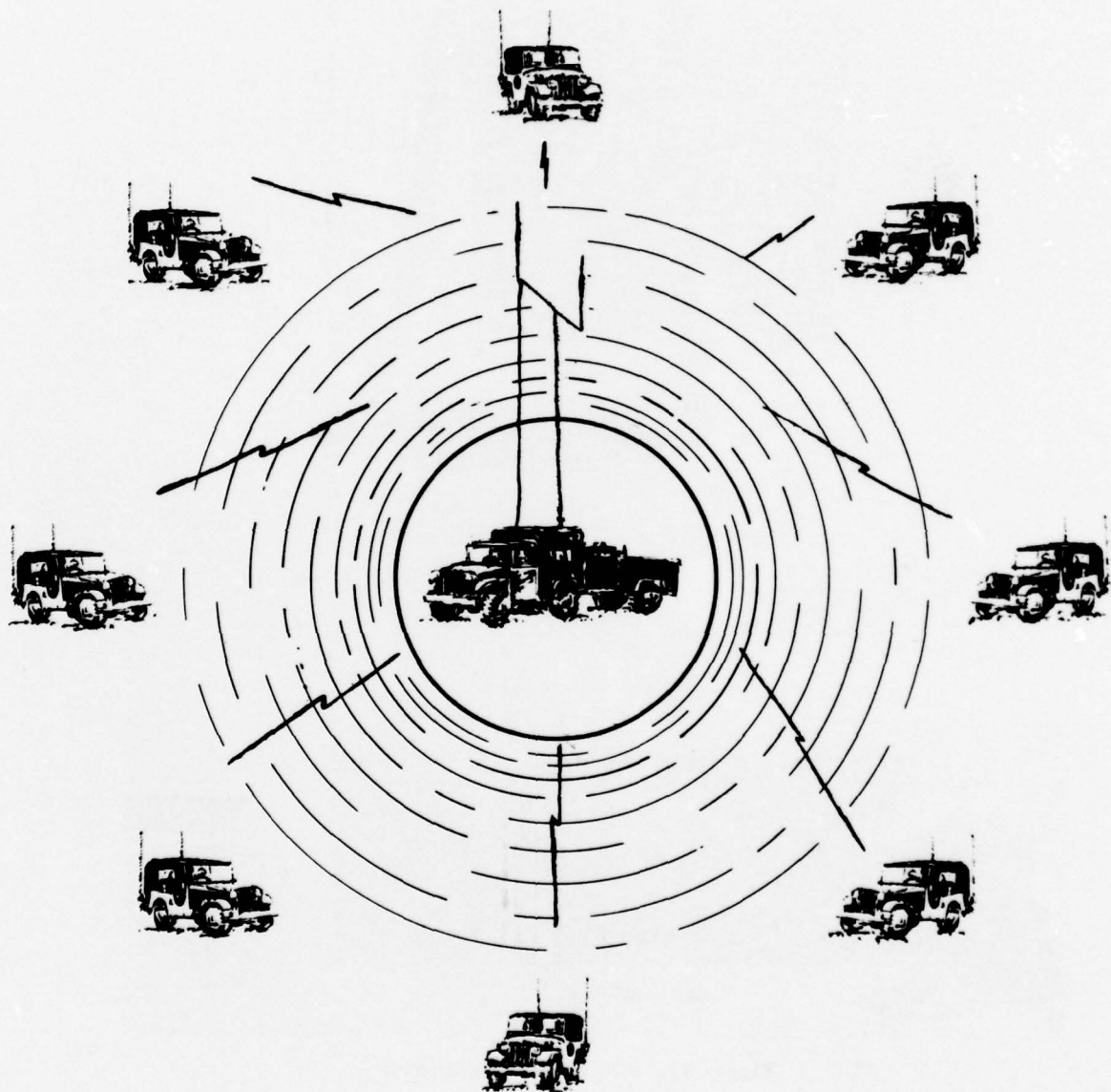


Figure 20. AN/MRC-66 Central Station.

A copy of the latest Communication Data utilized at the United States Army Infantry School for instructional purposes has been made available to you.

Communication is the voice of command. It must be heard.

CHAPTER 6

GROUND MOBILITY DEPARTMENT PRESENTATION

CAPTAIN JEFF F. CHERRY

Instructor, Operations and Control Committee, Ground Mobility Department

The area of responsibility for a battle-group-size unit, as opposed to the Infantry regiment, has increased two and one half times since World War II and Korea. The firepower potential of the battle group has increased fifteen percent. There has been very little increase in the organic mobility capability - only 3.65 percent; therefore, we must place more emphasis for future warfare on the ability to move quickly and easily - on mobility that gives the commander the flexibility to move his combat power about the battlefield inflicting his will upon the enemy. The commander must tailor his concept of operation to his plan of maneuver or movement. We feel there are four essentials of mobility. First, the commander must know the means available. Second, knowledge of the capabilities and limitations of the means is essential. Third, knowledge of the operations of the means is necessary. Last, but certainly not least, the commander must have a complete understanding of the maintenance of the means.

Commanders must be completely familiar with the tools of the trade - mobility being one - to be successful in combat operations. Battlefield mobility is achieved through mechanical means: the M-series tank vehicles; the self-propelled gun; the armored personnel carrier, utilized to transport the fighting elements with their supplies and equipment; and the wheeled vehicles, utilized for logistical support, weapons carriers, and as command and reconnaissance vehicles.



Figure 1. Tank 90mm Gun M48A2.

MEANS AVAILABLE

The largest of the means is the 90mm gun, tank, M48A2 (Figure 1), a medium tank mounting the 90mm gun as the main armament, organic to the Infantry division tank battalion. Its mission is to close with and destroy enemy forces, using fire, maneuver, and shock action in coordination with other arms. The M48 is capable of attacking or counterattacking under hostile fire, destroying enemy armor by fire, and supporting Infantry units by fire, employing the 90mm gun, the caliber .30 machinegun fired independent of or in conjunction with the main gun, and the caliber .50 machinegun mounted on the turret and used against ground targets of opportunity. Using HVAP ammunition, the 90mm gun will penetrate a medium tank at a range of 1500 yards. The turret and hull are constructed of cast armor that approaches an elliptical shape. This provides better ballistic protection against antitank projectiles and enables the vehicle to maneuver under hostile fire, exploit after breakthrough, and exploit rapidly the effects of mass destruction weapons. The tank's combat weight is 105,000 pounds, and it requires a crew of four to operate. Sixty-four rounds of ammunition are carried as the basic load on the vehicle. The electrically operated turret will traverse the 90mm gun 360 degrees in 15 seconds with a maximum rate of fire of four rounds per minute. The 825 horsepower Continental fuel-injection engine provides a 160-mile operating range on 335 gallons of fuel with a maximum speed of 30 miles per hour. The combined power, traction, and flotation, coupled with its cross-drive transmission (that provides neutral steer) and the torsion bar suspension system, enable this tank to operate over very rough terrain.



Figure 2. Tank 76mm Gun M41A3.

The 76mm gun, tank, M41A3 (Figure 2) is a lightly armored, highly mobile, air-transportable vehicle organic to the Infantry battle group reconnaissance platoon and the Infantry division cavalry squadron. It is normally employed on reconnaissance and security missions, but is capable of engaging in offensive, defensive, and delaying action employing the 76mm gun, the main armament on the vehicle, the caliber .30 machinegun fired independent of or in conjunction with the main gun and the caliber .50 machinegun mounted on the turret and used against ground targets of opportunity. Using HVAP ammunition, the 76mm gun will penetrate a medium

tank at ranges up to 800 yards. The turret and hull are constructed of welded steel plate that approaches an elliptical shape. This provides better ballistic protection against enemy fires and enables the vehicle to maneuver under hostile fires, exploit after breakthrough, and exploit rapidly the effects of mass destruction weapons. The armor thickness is one inch to one and one-half inches, varying throughout the vehicle. The gun shield is the heaviest armor. The combat weight of the M41 is 51,800 pounds, and it requires a crew of four to operate. Sixty-five rounds of ammunition are carried as the basic load on the vehicle. The electrically operated turret will traverse the 76mm gun 360 degrees in 15 seconds with a maximum rate of fire of four to six rounds per minute. The 525 horsepower Continental fuel-injection engine provides a 110-mile operating range on 140 gallons of fuel with a maximum speed of 45 miles per hour. The combined power, traction, and flotation, coupled with the cross-drive transmission (that provides neutral steer) and the torsion bar suspension system, enable this tank to operate over very rough terrain. Due to the high rate of fire, the ammunition can be expended in less than 15 minutes; therefore, a highly trained crew is necessary to make every round count. The commander must plan carefully for the ammunition resupply and for the fuel to move the gun to employ it where it is needed most.

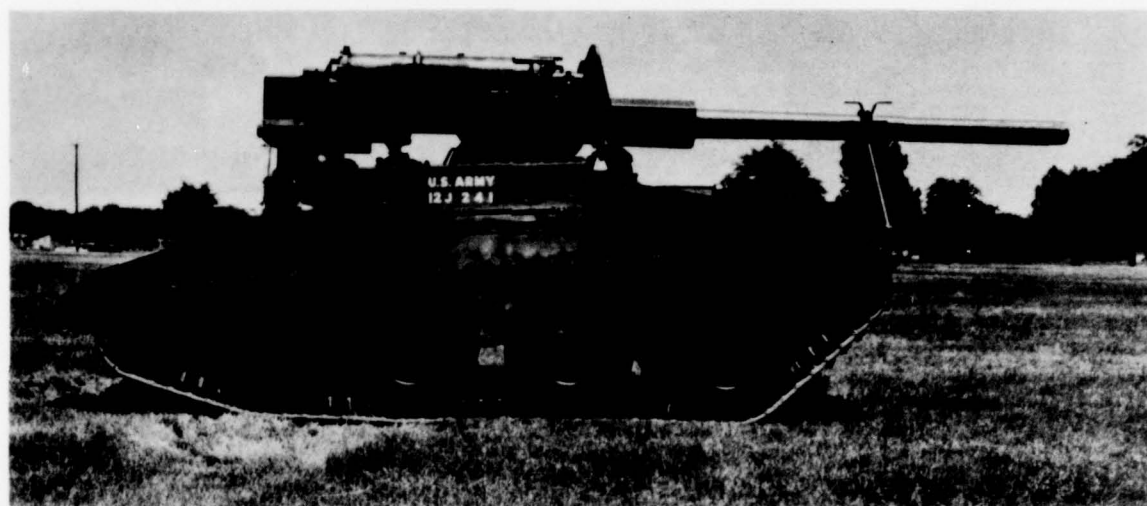


Figure 3. 90mm Gun Self-Propelled M56.

The self-propelled 90mm gun (Figure 3) weighs only 7 3/4 tons, is constructed of aluminum alloy and mounts a 90mm gun. The self-propelled 90mm gun is especially suitable for dropping into an airhead and providing highly mobile antitank support. Its ability to maneuver and change direction rapidly qualifies it as a hard-hitting and very lethal weapon when employed properly against enemy armor and other suitable targets. It requires a crew of four to operate and carries 29 rounds of 90mm ammunition in the basic load located in ammunition wells directly to the rear of the gun. This vehicle has excellent traction, a low ground pressure of 4.5 psi that enables it to maneuver over rough terrain at a maximum governed speed of 28 miles per hour, and a cruising range of 140 miles on 55 gallons of fuel. It is an ideal antitank weapon that is easy and economical to operate.

The mission of the Infantry soldier is to close with and destroy or capture the enemy forces. The armored personnel carrier, M113 (Figure 4), is the means available to assist the foot soldier in the accomplishment of his mission. It provides him with a cross-country mobility capability, transporting him over great distances in a short time and delivering him close to or on the objective in a fighting condition.

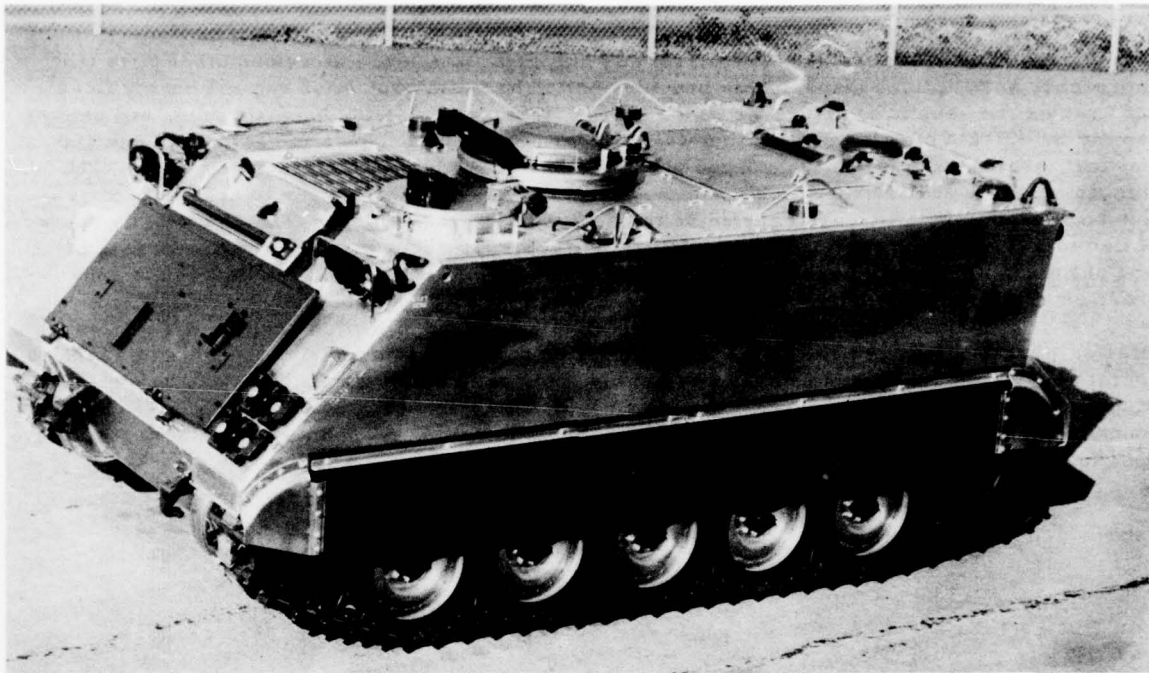


Figure 4. Full-Track Armored Personnel Carrier, M113.

The carrier serves many purposes other than transporting troops. It can be used for transporting supplies and equipment and for evacuating the wounded in areas impassable to wheeled vehicles. It is a lightly armored, air-transportable and air-droppable vehicle weighing 20,000 pounds. It carries a payload of 3860 pounds or a driver and 12 men combat equipped. It is constructed of aluminum alloy that provides a degree of protection against small arms, shrapnel and nuclear weapons. The M113 is organic to the Infantry battle group reconnaissance platoon (one for the rifle squad and one for the 81mm mortar squad) and to the division transportation battalion and is attached to the battle group on a mission basis. It is capable of operating cross-country at a maximum speed of 40 miles per hour with a cruising range of 200 miles on 85 gallons of fuel. The caliber .50 machinegun mounted on the commander's hatch is employed against ground targets of opportunity. The M113 is an amphibious vehicle capable of operating on inland waterways at a maximum speed of 3.7 miles per hour. Its forward propulsion in water is provided by the turning movement of the tracks. Its steering in the water is accomplished the same as on land by use of the braking laterals.

The armored personnel carrier, M59 (Figure 5), is the predecessor of the M113 and is in the hands of the troops in the field. The M59 possesses several of the capabilities of the M113. It is air-transportable but not air-droppable. It employs two GMC engines that are difficult to keep synchronized. It presents a much higher silhouette than the M113. It is constructed of welded steel plate and weighs 42,600 pounds combat loaded.

Organic wheeled vehicles provide the necessary logistical support. The 3/4-ton is also employed as a weapons carrier and the 1/4-ton truck M38A1 is employed as a command and reconnaissance vehicle.

The largest of the wheeled vehicles is the 5-ton cargo truck, M54 (Figure 6), with the primary mission of transporting the battle group basic load of ammunition. Seven are organic to the battle group. This vehicle employs power steering.



Figure 5. Full-Track Armored Personnel Carrier, M59.

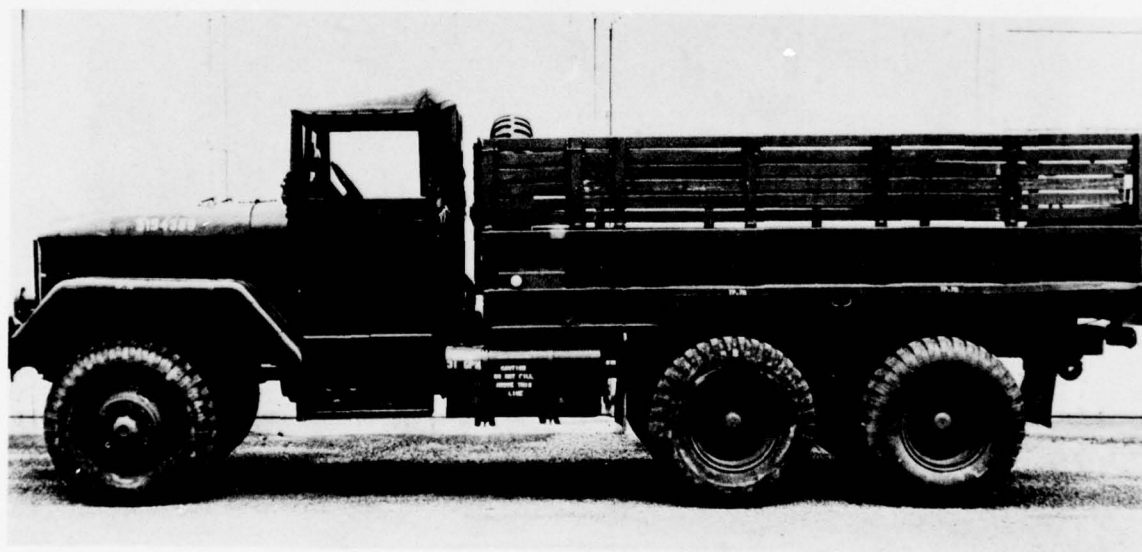


Figure 6. Truck Cargo 5-Ton M54.

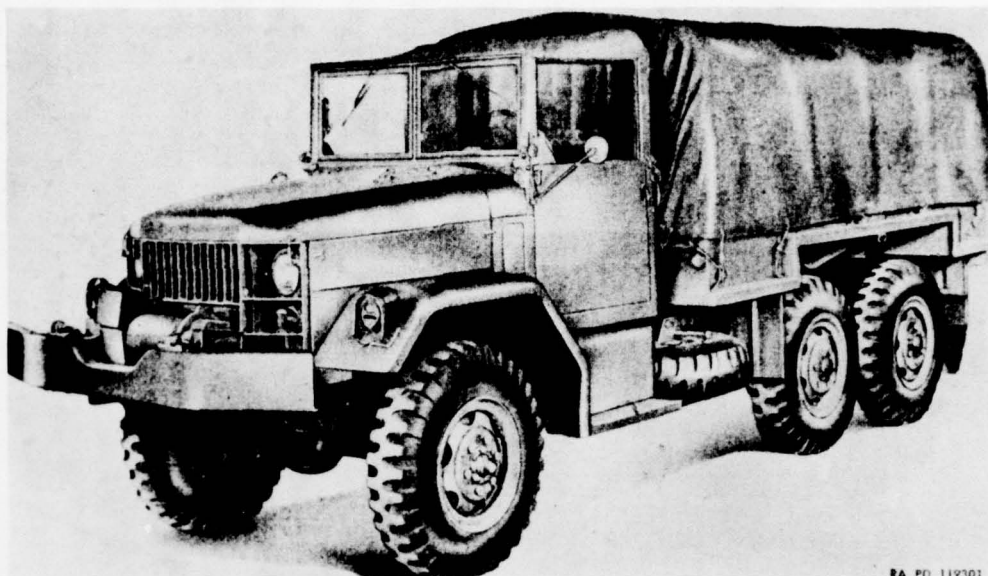


Figure 7. 2 1/2-Ton 6x6 Cargo Truck M34 (Reo).

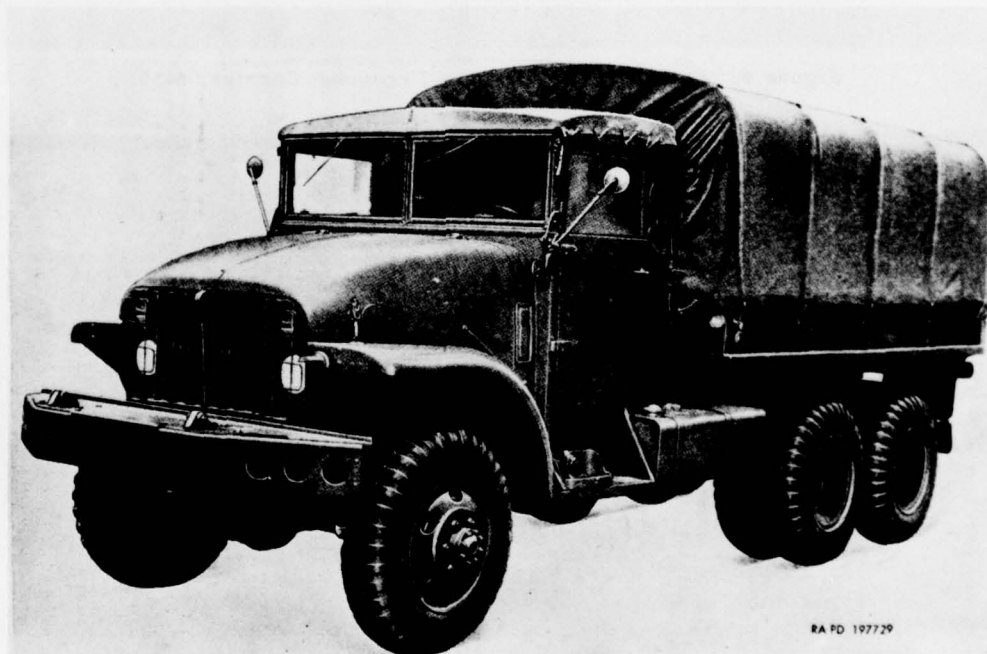


Figure 7A. 2 1/2-Ton 6x6 Cargo Truck M211 (GMC).

The 2 1/2-ton cargo truck (Figure 7) is the principal logistical vehicle in the battle group. It carries the kitchens, supplies, and troops. Sixteen are organic to the battle group. Both Reo standard shift and GMC hydramatic trucks are in use.

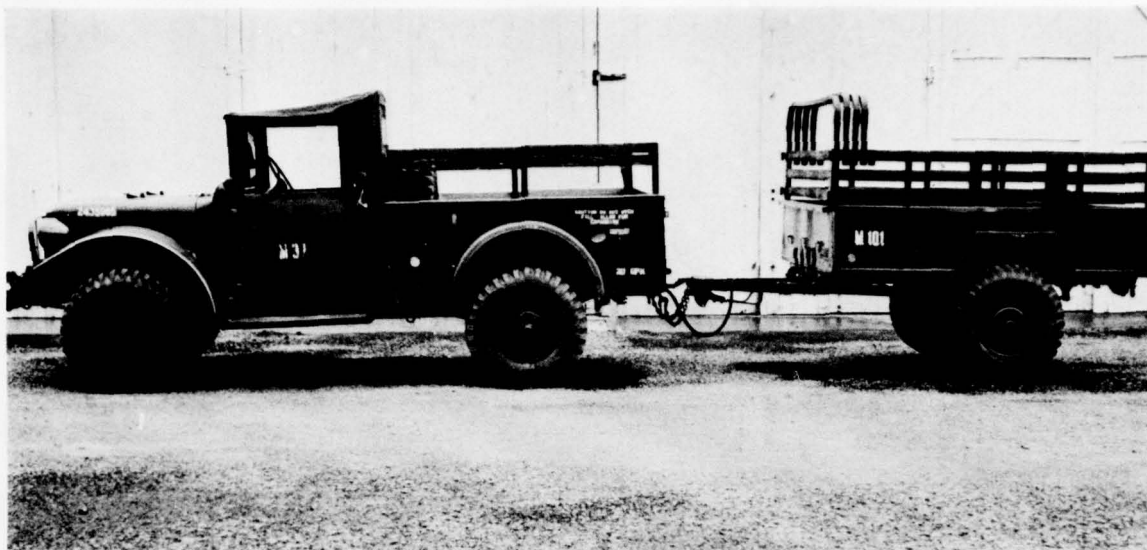


Figure 8. Truck Cargo 3/4-Ton M37.

The 3/4-ton vehicle (Figure 8) is used as a cargo vehicle and as a weapons carrier in the battle group. Fifty-one are organic to the battle group.



Figure 9. Truck Utility 1/4-Ton Ambulance M170.

The M170 1/4-ton frontline ambulance (Figure 9) carries three litter patients and is used to evacuate the wounded from the frontlines to the battle group aid station. Fourteen are organic to the battle group.

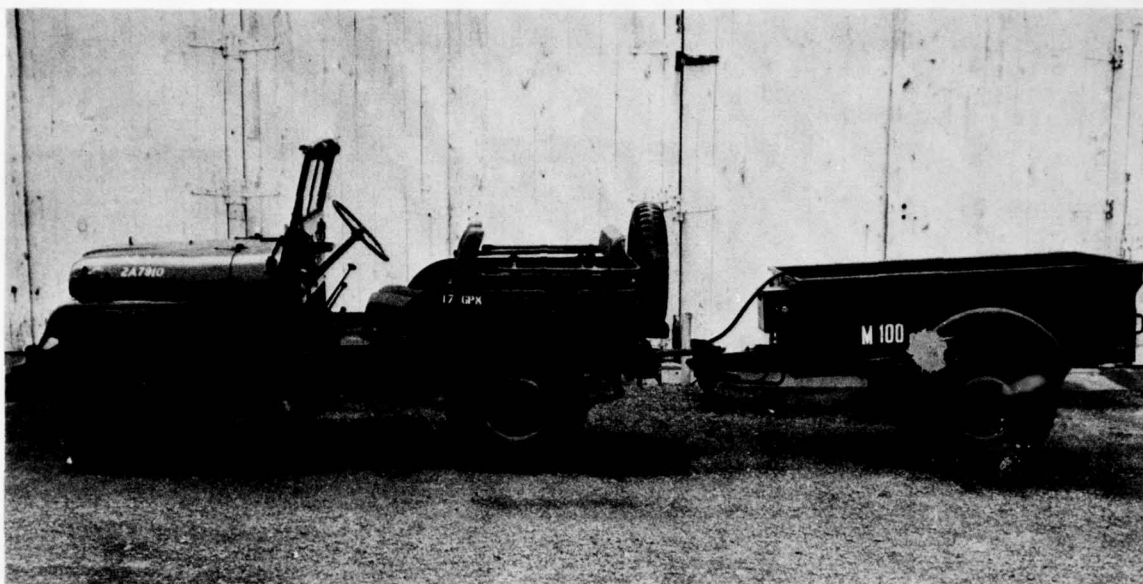
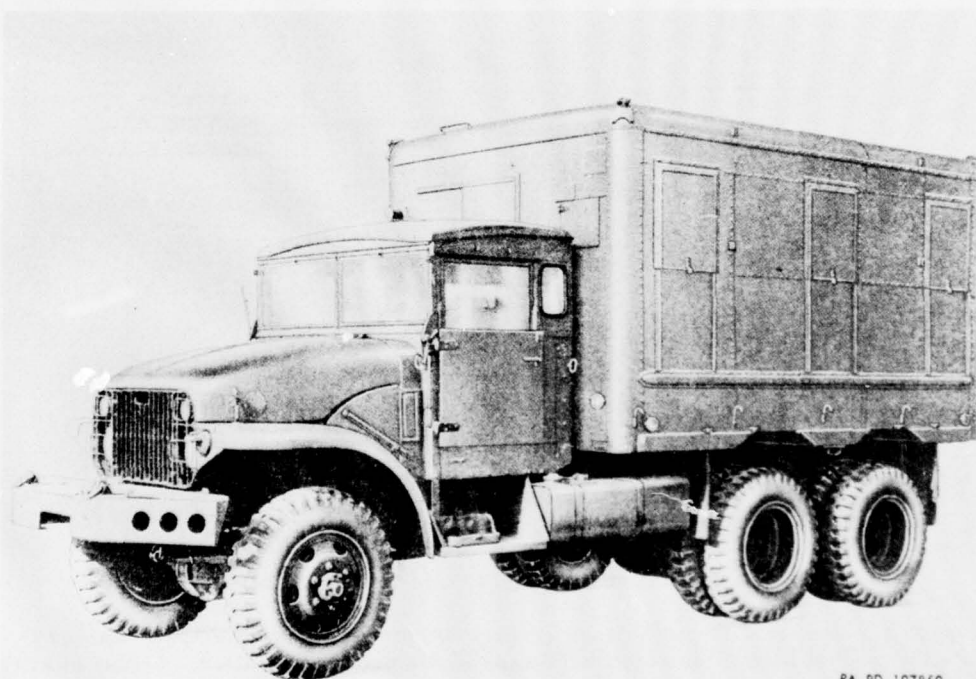


Figure 10. Truck Utility 1/4-Ton M38A1.

The M38A1 1/4-ton truck (Figure 10), commonly known as the jeep, is used as a command and reconnaissance vehicle. Seventy-three are organic to the battle group. It also mounts the 106mm recoilless rifle.



RA PD 197859

Figure 11. 2 1/2-Ton 6x6 Shop Van Truck M220--three-quarter left front view.

The M109 or M220 shop van (Figure 11) is the battle group commander's mobile command post. One is organic to the battle group.



RA PD 135262

Figure 12. Dump Truck M51.

Three M51 5-ton dump trucks (Figure 12) are organic to the battle group engineer platoon.

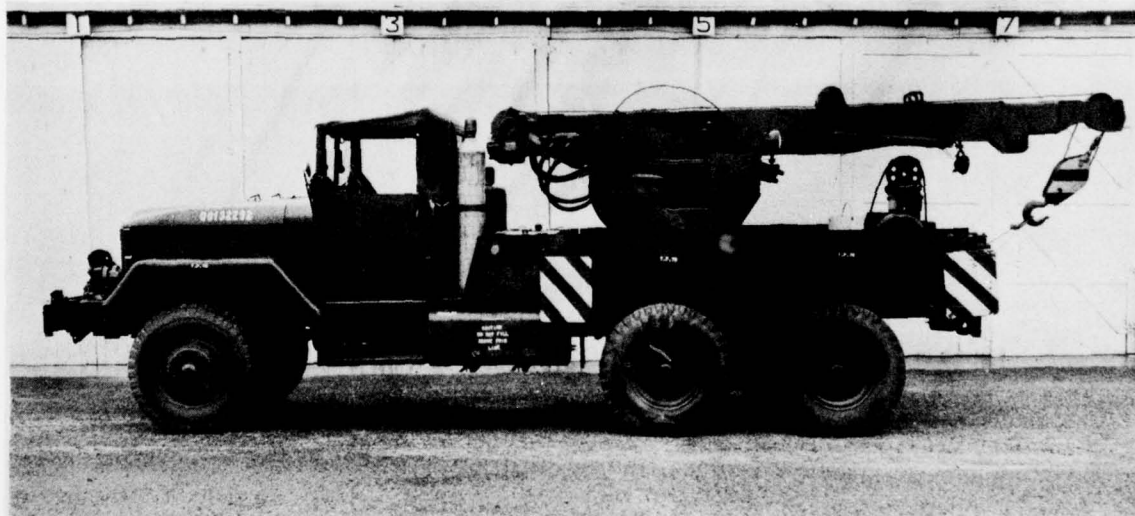


Figure 13. Truck, Wrecker, Medium 5-Ton M62.

One M62 5-ton wrecker (Figure 13) is organic to the battle group headquarters and headquarters company, supply and maintenance platoon.

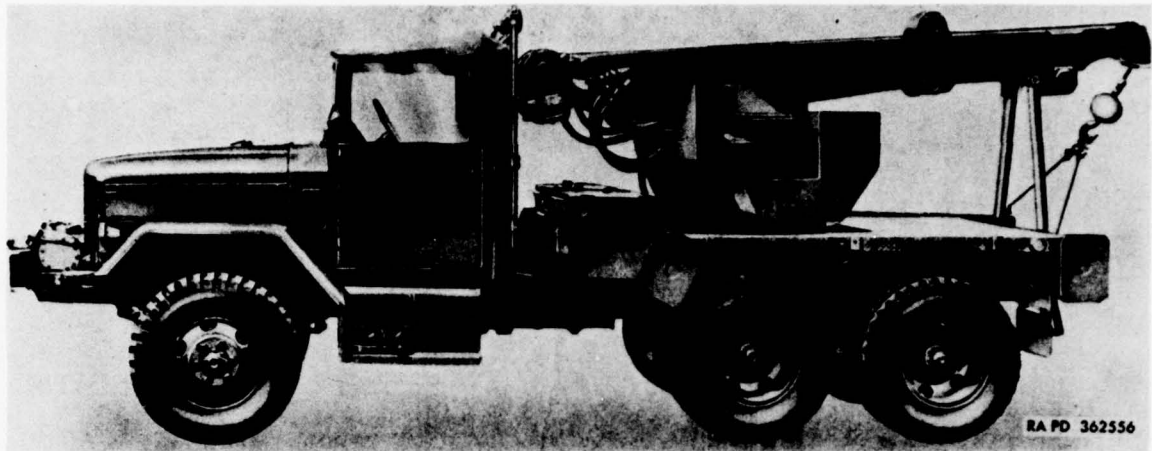


Figure 14. 2 1/2-Ton 6x6 Crane Truck M108 (Reo).

The M108 2 1/2-ton wrecker (Figure 14) is organic to the combat support company of the battle group.

The 5-ton and the 2 1/2-ton wreckers are used for battlefield recovery and evacuation of wheeled vehicles and for second echelon maintenance functions.

When the Army discharged the last of the hay-eating mules, the gasoline-fed mule enlisted in its place--the M274 1/4-ton weapons carrier (Figure 15).



Figure 15. Carrier, Weapons, 1/4-Ton M274.

Obstacles normally encountered in combat require that military vehicles have the power, traction, flotation, and momentum to overcome them. All military vehicles are designed to negotiate a 60 percent slope, and each vehicle is constructed to negotiate obstacles with a specifically rated performance capability that requires a well-trained operator. The large water obstacle is 40 inches in depth and designed to demonstrate fording ability, traction and flotation. Dirt mounds demonstrate the action of the torsion bars on the tracked vehicles. The ditch demonstrates spanning capability, and the wall demonstrates the vertical climbing capacity of the tracked vehicles. The mud obstacle demonstrates traction and flotation. Log obstacles demonstrate the ability of the wheeled vehicles to negotiate rough terrain, although they do not have a rated vertical climb capacity. Log obstacles also demonstrate the action of the suspension on wheeled vehicles.

The Roman soldier during Caesar's reign moved in a manner common to all Infantry soldiers, at 2 1/2 miles per hour. On the nuclear battlefield, the Infantry soldier is still required to move on foot to occupy the terrain and close with and capture or kill the enemy. Two thousand years have passed since Caesar's reign. The equipment has changed, but the mission remains the same. With modern weapons and machinery, the battlefield becomes a mass of fast moving men and equipment. In order to place the foot soldier in a position to accomplish his mission, a mechanical means of mobility must be provided. Both the commander and operators must possess knowledge of the capabilities of the mechanical means before sound decisions can be made. Knowledge of the capabilities of the means and careful terrain analysis are the keys to successful utilization.

The medium tank will ford 48 inches of water, span a ditch 8 1/2 feet wide, climb a vertical obstacle 36 inches high, and employ neutral steer enabling it to turn with its own length. The M41A3 light tank will ford 40 inches of water, span a ditch six feet wide, and climb a vertical obstacle 28 inches high. It also employs neutral steer. The M56 self-propelled 90mm gun will ford 42 inches of water without a fording kit--and with a fording kit, 60 inches. It will span a ditch four feet wide, climb a vertical obstacle 30 inches high, and employ pivot steer requiring a minimum of nine feet to turn. The M113 has an unlimited fording capability, will span a ditch 5 1/2 feet wide, climb a vertical obstacle 24 inches high and it requires 22 feet 8 inches to turn around. Capabilities of the M59 are the same as the M113, except that the M59 requires 23 feet to turn and will climb a vertical obstacle 18 inches high. The 5-ton truck and the 2 1/2-ton truck will ford 30 inches of water without a fording kit--with a fording kit, 72 inches for the 2 1/2-ton and 84 inches for the 5-ton.

Tracked and wheeled vehicles that have been discussed and demonstrated are in the hands of troops or will become available in the immediate future. Knowledge of their capabilities can be the connecting link in a broken lifeline. In the hands of the uninformed they are a burden, but in the hands of the informed they are a mighty weapon, a tool of the trade. Knowledge of this tool is a must on the nuclear battlefield in order to stay alive and to close with and capture or kill the enemy.

CHAPTER 7

AIRBORNE-AIR MOBILITY DEPARTMENT PRESENTATION

Section I. INTRODUCTION

COLONEL WILLARD E. HARRISON

Director, Airborne-Air Mobility Department

Good afternoon, gentlemen. I wish to take this opportunity to welcome you to the Airborne-Air Mobility Department's portion of the 1960 Infantry Instructors Conference. This hour is designed to brief you on recent developments in the field of Infantry air mobility.

The United States Army is today faced with a formidable challenge, that of maintaining readiness to deal with a potential enemy whose ground forces consist of vast standing armies and reserves disposed across an extensive geographical area. These vast forces are highly mechanized and supported by highly mobile artillery, guided missiles, and aircraft. To counter these forces we must achieve maximum ground tactical mobility and then augment this ground mobility by means of air mobility through the use of helicopters and fixed wing aircraft organic to our field armies, combat divisions and battle groups. As the state of the art is further improved, we visualize progressing to a degree of completely airmobile, ground fighting combat units based on air vehicles of radically new design.

Our purpose then in this hour is to familiarize you with the progress that has recently been made towards this goal of completely airmobile ground fighting combat units. At this time I wish to introduce Captains Fite and Gannon who will present to you some recent developments in the field of Infantry air mobility. Upon the conclusion of their presentation a panel of officers from the Airborne-Air Mobility Department will answer any questions you may have. Please defer your questions until that time.

Section II. 1960 ARMY STUDY REQUIREMENTS AND THE ARMY AIRCRAFT REQUIREMENTS REVIEW BOARD

CAPTAIN R. A. FITE

Technical Board Member, Air Mobility Committee, Airborne-Air Mobility Department

In past years it has been the practice of the United States Army to accept each new aircraft which was produced and find a use for that aircraft as it became available. However, with the future operational concepts of the Army being so heavily dependent upon air vehicles, the Army can no longer afford to pursue this policy. The Army must have aircraft that are tailor-made to perform the required missions. The aircraft industry must be made aware of the operational requirements of the Army in the field and must design aircraft to meet these requirements.

What steps are being taken to insure that the aircraft industry is aware of the specific needs of the Army?

In August of 1959, Research and Development, Department of the Army, prepared an Army Aircraft Development Plan. On 1 and 2 December a conference was held at Headquarters USCONARC at which this Army Aircraft Development Plan was presented to representatives of the aircraft and electronics industry. This plan stated the Army's requirement to procure a new light observation aircraft, a new surveillance aircraft and a new transport aircraft. These industry representatives were invited during this conference to submit design studies by 1 February 1960 on the three aircraft requirements stated in this plan.

On 15 January 1960, by direction of the Chief of Staff, Department of the Army, an ad hoc board consisting of ten general officers was formed. This board was called the Army Aircraft Requirements Review Board. The mission assigned to this board was to explore and recommend the best courses of action to be followed to meet the Army's requirement for the three new aircraft.

In order to accomplish its assigned mission, the Army Aircraft Requirements Review Board scheduled an evaluation program which was to be supervised by the Chief of Research and Development and was to be conducted by personnel from various Army agencies having interest in these new aircraft. This evaluation program was conducted in two phases. Phase I was conducted during the period 25 January - 14 February and consisted of a technical and operational evaluation of each individual design study that industry had submitted. Phase II of the evaluation was conducted from 15 February - 29 February. This phase consisted of a comparative analysis of the proposals submitted for each type of aircraft and the preparation of the evaluators' recommendations to the Army Aircraft Requirements Review Board. The review board subsequently briefed the Chief of Staff, Department of the Army on 10 March.

The review board recommended that no specific action be taken at this time toward procurement of new types of surveillance aircraft or transport aircraft. They recommended that the area of greatest need was in the light observation aircraft field and that the highest priority be assigned to the development of a new aircraft to perform the missions presently assigned to the H13, H23 and L19. A statement of requirement was presented which contained certain significant characteristics desired in this new light observation aircraft. Upon approval of these significant characteristics by the Chief of Staff, Department of the Army, military characteristics for the new light observation aircraft were prepared by the US Army Aviation Board and subsequently approved by Headquarters, USCONARC on 30 March. The significant characteristics of this new light observation aircraft are:

TYPE: VTOL

PAYLOAD: 400 pounds

SPEED: 110 knots

SIZE AND WEIGHT: Smaller and Lighter than H13

ENDURANCE: 3 hours

NUMBER OF SEATS: 4 (including pilot)

MAINTENANCE: Easily maintained - 300 hours between periodic inspections

In the near future, a design competition will be announced by Department of the Army. Two designs will be chosen for development and will be carried through prototype testing prior to selection of the final winner. The first models of this new aircraft are expected to be in the hands of using organizations by FY 64.

The establishment of the Army Aircraft Requirements Review Board and the subsequent evaluation program gave the aircraft industry a greater appreciation of the operational requirements of the Army and at the same time gave the Army's representatives a better appreciation of the state of the art and of the technical problems involved in aircraft development. If the Army is to obtain the types of aircraft it considers essential to support its future operational concepts, this mutual understanding between the designers and the users must continue.

Section III. THE C130 AIRCRAFT WITH BOUNDARY LAYER CONTROL

CAPTAIN T. G. GANNON

Technical Board Member, Air Mobility Committee, Airborne-Air Mobility Department

As an example of what can be accomplished by industry when the Armed Forces make their operational requirements known, I offer the Blowing Boundary Layer Control C130 presently under development by the Lockheed Aircraft Corporation.

In 1955, Department of the Air Force published general operational requirement number 130. This requirement was for an assault transport capable of carrying 20,000 pounds of cargo over a radius of 1000 nautical miles with the midpoint landing and take off being made on an unprepared field approximately 500 feet in length.

Lockheed Aircraft Corporation initiated a program to fulfill this requirement by modifying the C130B aircraft to achieve short take-off and landing performance. The modification of an already existing aircraft afforded the simplest and most economical approach to the problem in the interest of time and funding limitations.

Their approach to the problem was to perfect a system which is called "blowing boundary layer control." The principles of boundary layer control have been known for years. Airplanes which have been built and flown previously with boundary layer control have demonstrated the fact that large improvements in performance can be achieved by proper utilization of this concept. Previous attempts to utilize this concept, however, have not been entirely successful due to problems encountered in the areas of aircraft stability and control.

Boundary layer control stood out by virtue of its simplicity as compared to concepts requiring tilting wings, tilting engines or large helicopter rotors. The blowing boundary layer control system is based on the principle of increasing lift at low flying speeds, by blowing high velocity streams of air over the control surfaces of the aircraft. The incorporation of boundary layer control features into the C130B airplanes effects a relatively small percentage of the basic airframe components. What has been done is shown in Figure 1.

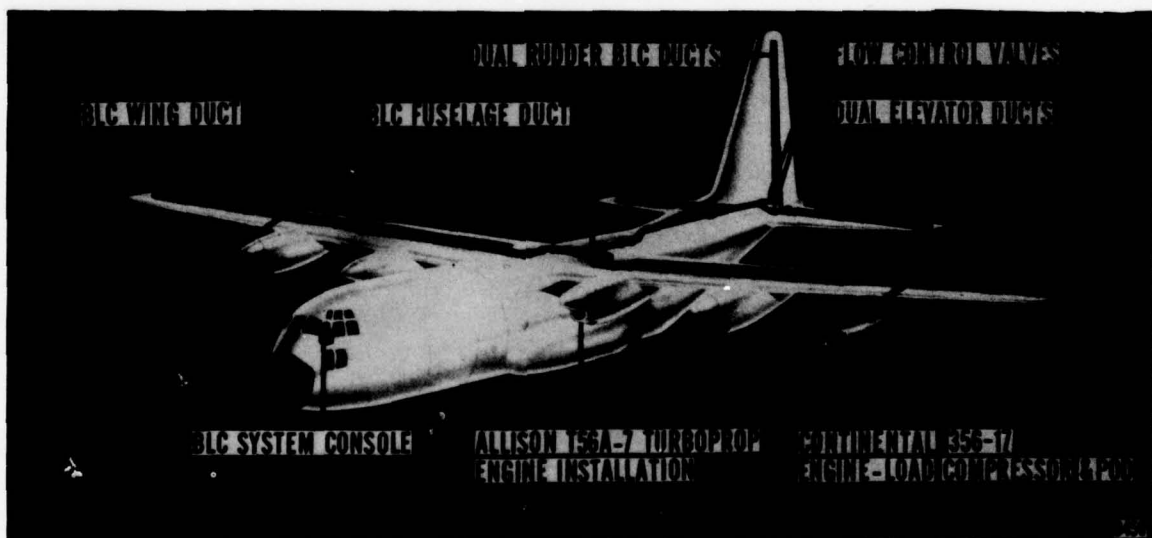


Figure 1. Boundary Layer Control System Installed in C130B Airframe.

The high pressure air for the system is supplied by four Continental 356-17 engines mounted in pairs which are housed in pods under the main wing, outboard of the outboard engines. These engines pump air into a duct which runs the full span of the main wing. There is another duct which carries the air from the main wing back to the horizontal and vertical stabilizers. Even if the boundary layer control engines on one side of the aircraft were to fail, the other engines would supply sufficient air to operate the system. On previous attempts to design boundary layer control aircraft, a separate system was built into each wing of the aircraft and the loss of power on one side caused a violent rolling of the aircraft. Previous boundary layer control aircraft did not make any attempt to build the system into the tail of the aircraft. This caused additional control problems at low speeds.

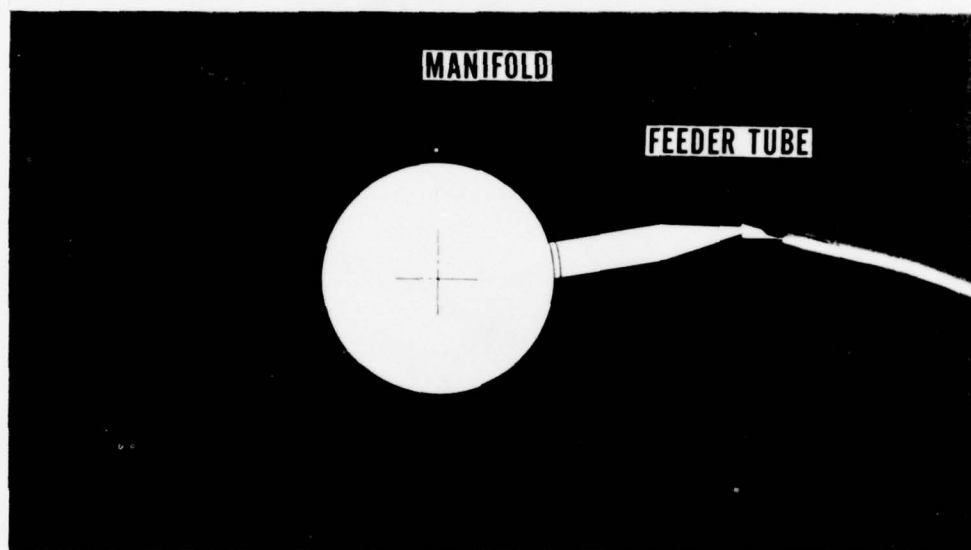


Figure 2. Nozzle which Carries Air from Main Ducts to Control Surfaces.

Spaced along the air ducts where they pass through the main wing and the vertical and horizontal stabilizers are nozzles which direct high-velocity streams of air over the control surfaces of the aircraft (Figure 2).

When standard type aircraft are required to fly at low speeds, for example during landing and take off, they lower their flaps to increase lift and thereby compensate for their loss of speed. The flap in the lowered position increases the lift but the flow of air over and beneath the wing is widely separated and thus causes turbulence to occur at the trailing edge of the flap. This turbulence to a great degree offsets the increased lift obtained by lowering the flap (Figure 3).

In the boundary layer control aircraft, the high-velocity streams of air which are released from the ducts and caused to flow over the control surfaces eliminates this separation of the air flow and consequently, the resultant turbulence at the trailing edge of the flap (Figure 4). In this manner the full efficiency of the flap is realized and the aircraft is consequently able to fly at low speeds without stalling. The boundary layer control aircraft has a stall speed of 50 miles per hour compared to 85 miles per hour for the standard C130B.

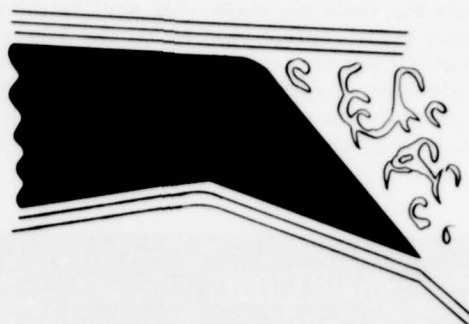


Figure 3. Flow of Air Around Conventional Control Surfaces.

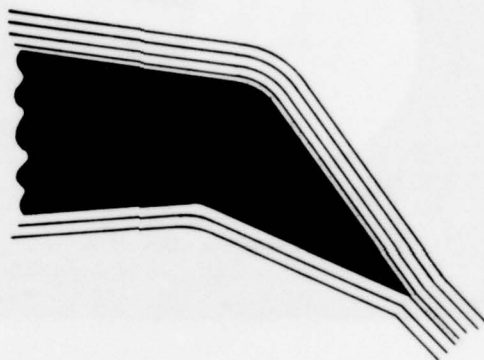


Figure 4. Flow of Air Around Airfoil Equipped with Boundary Layer Control.

The designer has provided a comparison of the take-off and landing characteristics of the Blowing Boundary Layer Control C130 and the standard C130B. For the purpose of this comparison, both aircraft have a maximum gross weight of 100,000 pounds. In order to take off and clear a 50-foot obstacle, the standard configuration requires 2300 feet; 1700 feet of this is ground roll (Figure 5). The Boundary Layer Control C130 can take off and clear a 50-foot obstacle in a distance of 1080 feet. Only 500 feet of ground roll is required (Figure 6). When landing over a 50-foot obstacle, the standard C130B requires a total distance of 2200 feet. This includes 1200 feet of ground roll (Figure 7). The Boundary Layer Control C130 can land over a 50-foot obstacle in a total distance of 870 feet. Of this, 460 feet is ground roll (Figure 8).

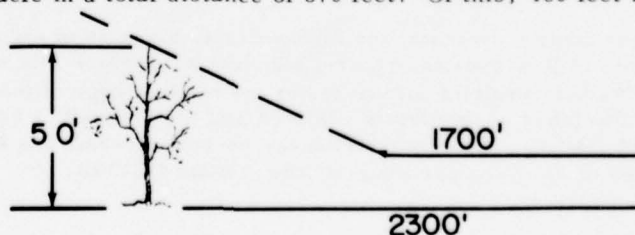


Figure 5. Take-Off Performance of the Standard C130B.

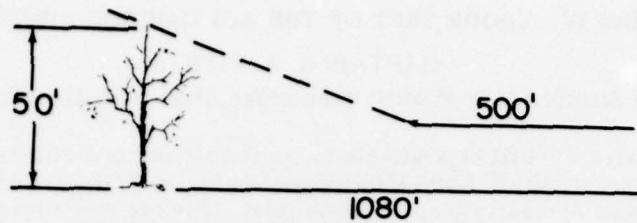


Figure 6. Take-Off Performance of the Boundary Layer Control C130.



Figure 7. Landing Performance of the Standard C130B.

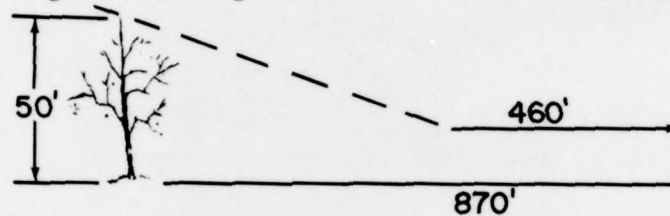


Figure 8. Landing Performance of the Boundary Layer Control C130.

We can readily see by a comparison of these figures that great progress has been made in the development of an assault transport aircraft with short field take-off and landing characteristics. The initial flights of the test bed aircraft were made early this year. The designers have informed us that these flights indicated that the performance figures previously mentioned have definitely been attained and with additional research may even be improved.

When the Blowing Boundary Layer Control C130 becomes available, it will provide the United States Air Force with the capability of air landing large amounts of troops and cargo on short, unimproved landing strips at the rear of the field army area.

Section IV. TROOP TEST OF THE AC1 CARIBOU AIRCRAFT

CAPTAIN R. A. FITE

Technical Board Member, Air Mobility Committee, Airborne-Air Mobility Department

What fixed wing aircraft will be available to the field army to airlift large amounts of cargo within its area of responsibility? Let me introduce you to the AC1 Caribou aircraft, manufactured by the DeHavilland Aircraft Company of Canada. It is the latest medium, fixed wing, transport aircraft under consideration for adoption by the United States Army (Figure 1).



Figure 1. The AC1 Caribou Aircraft.

Some of the important characteristics of this aircraft are:

It is an all metal, high-wing monoplane.

This aircraft is powered by two Pratt and Whitney engines. It can cruise at a speed of 150 knots.

Its overall dimensions are: wing span, 96 feet; length, 72 feet; height (to the top of tail fin), 31 feet.

The dimensions of the cargo compartment are (Figure 2):

length, 28 feet 9 inches.

width, 73 inches.

height, 75 inches.

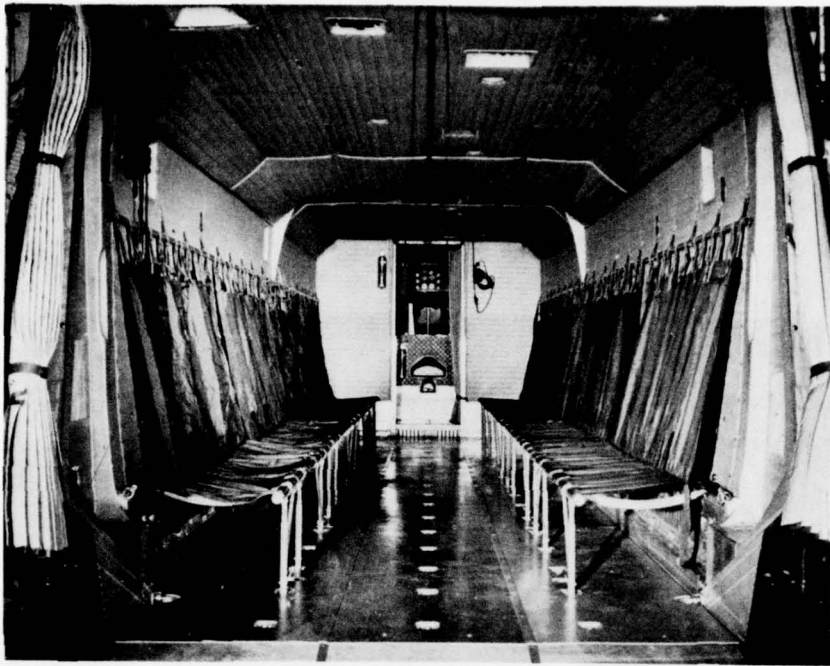


Figure 2. Cargo Compartment of the AC1 Caribou Aircraft.

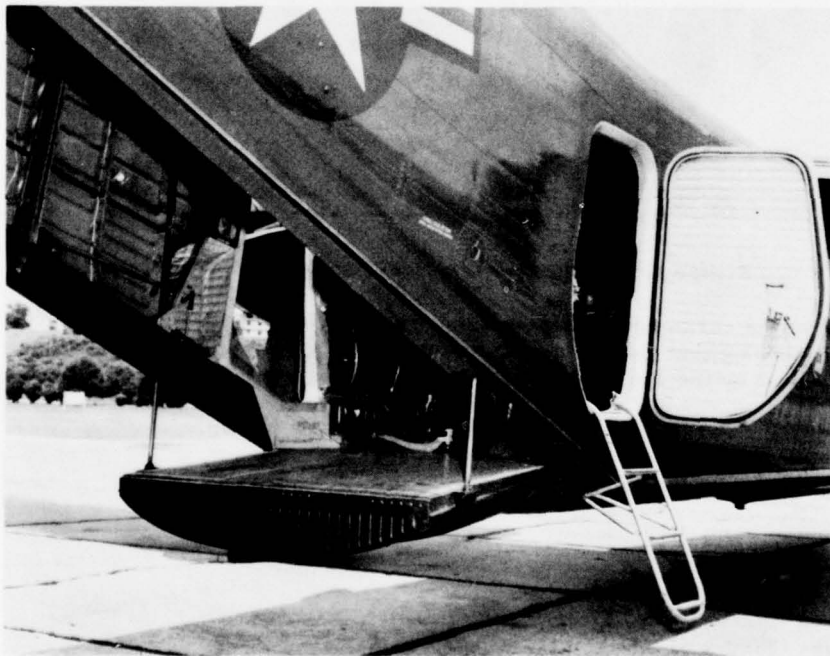


Figure 3. Rear Ramp and Side Doors of Caribou Aircraft.

The cargo compartment has two side doors and a rear ramp which may be used for the loading of troops and cargo. This rear ramp may be opened and closed in flight to permit the discharge of cargo or parachutists from the aircraft (Figure 3). The Airborne and Electronics Board has completed their Aerial Delivery Tests with this aircraft. It has been jumped here at Fort Benning during Project MAN and the last JCOC presentation. There are two methods of exiting parachutists from this aircraft. The primary method is for a stick of 24 parachutists to exit single file from the ramp (Figure 4). The alternate method is for a stick of 12 parachutists to exit from each side door. In this case, care must be taken to insure that jumpers in opposite doors do not exit simultaneously.

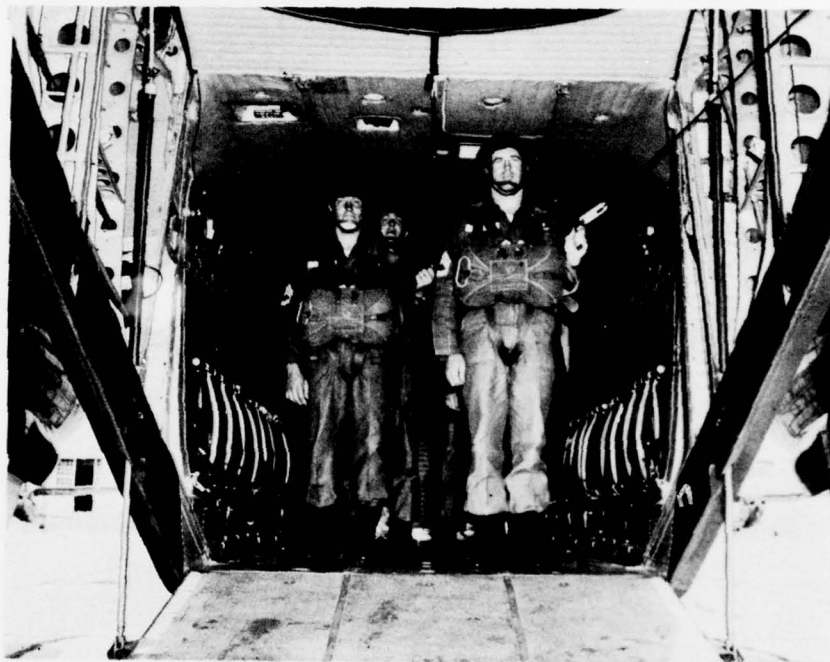


Figure 4. Parachutists in Position to Exit from Ramp.

The floor of the cargo compartment has a load bearing capacity of 200 pounds per square foot. It is 45 inches above the ground which permits the loading of cargo from the bed of a truck (Figure 5) or by the use of a fork lift (Figure 6).

This aircraft is capable of carrying the following type loads:

- 32 combat-equipped troops
- 24 parachutists
- 14 litter cases (Figure 7)
- 2 jeeps (Figure 8)



Figure 5. Loading Cargo from Bed of Truck.

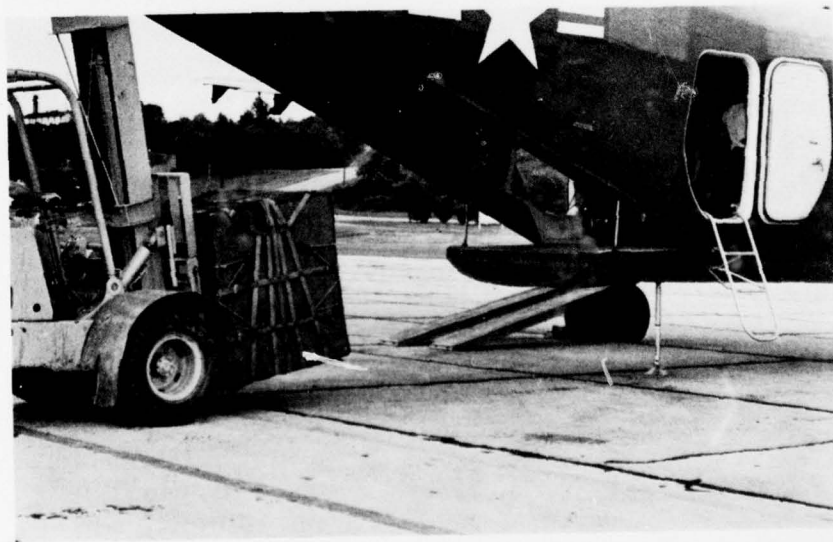


Figure 6. Loading Cargo with Fork Lift.

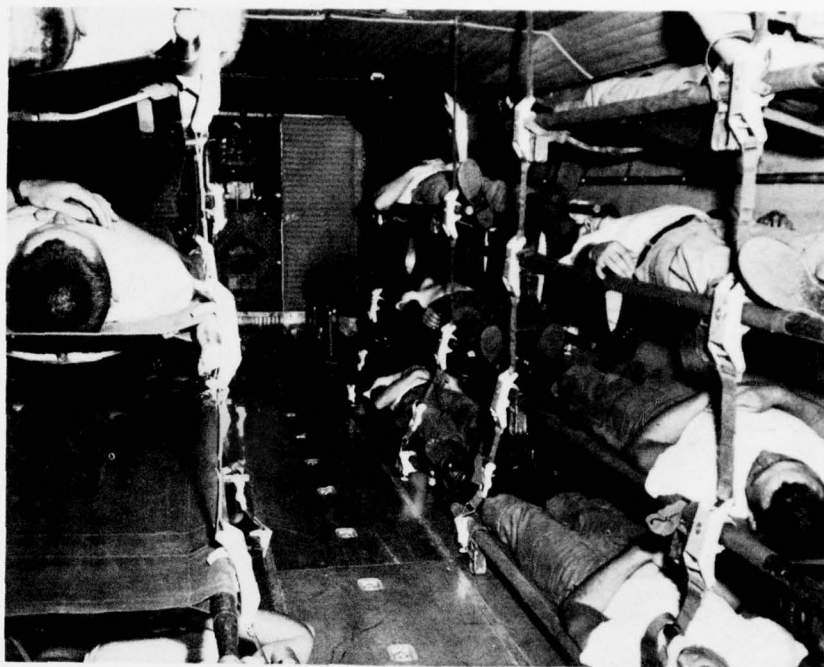


Figure 7. Caribou Aircraft Outfitted with Litters.



Figure 8. Two 1/4-Ton Trucks in Caribou Aircraft.

This aircraft is capable of carrying the following amounts of bulk cargo over the following ranges:

6000 pounds for 230 nautical miles

5000 pounds for 480 nautical miles

4000 pounds for 720 nautical miles

3000 pounds for 970 nautical miles

This aircraft can take off from an unprepared strip and clear a 50-foot obstacle in a total distance of 1020 feet with zero wind conditions. The aircraft will be off the ground in this type of take off in a distance of 540 feet (Figure 9).

This aircraft can land over a 50-foot obstacle in a total distance of 1020 feet. The aircraft will come to a halt after a ground roll of 525 feet (Figure 10).

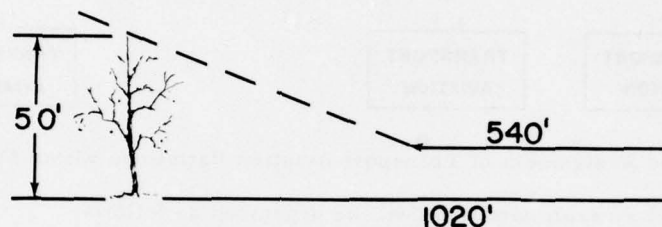


Figure 9. Take-Off Performance of the AC1 Caribou Aircraft.

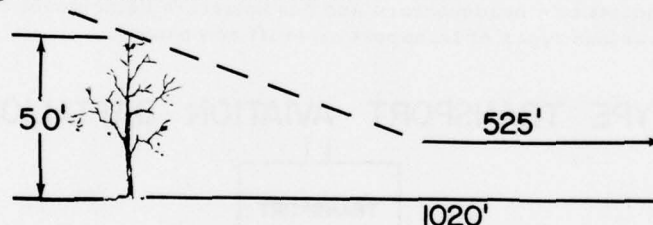


Figure 10. Landing Performance of the AC1 Caribou Aircraft.

So far we have seen what the Caribou aircraft looks like and have discussed some of its capabilities. Let us now consider a proposed concept of its future employment.

The current field army area of responsibility varies in width and depth from 100 - 200 miles in each dimension. It has already been mentioned that the Caribou is capable of carrying 6000 pounds of bulk cargo for a distance in excess of 200 nautical miles. This capability of the Caribou will permit locating its base airfields at the rear of the field army area for routine operations. The Caribou aircraft will be able to operate as far forward as the division area and return to its base airfield without refueling.

Present indications are that the Caribou will be able to operate continuously from runways having minimum preparation; therefore, the Caribou will use the Hasty type airfield as a base airfield and will land and take off from Pioneer type strips throughout the field army area.

Within the field army of the future it is proposed that we shall have transport aircraft battalions assigned as follows:

One transport aircraft battalion will be assigned to the field army and one transport aircraft battalion will be assigned to each corps with the field army (Figure 11).

TYPE FIELD ARMY AVIATION STRUCTURE

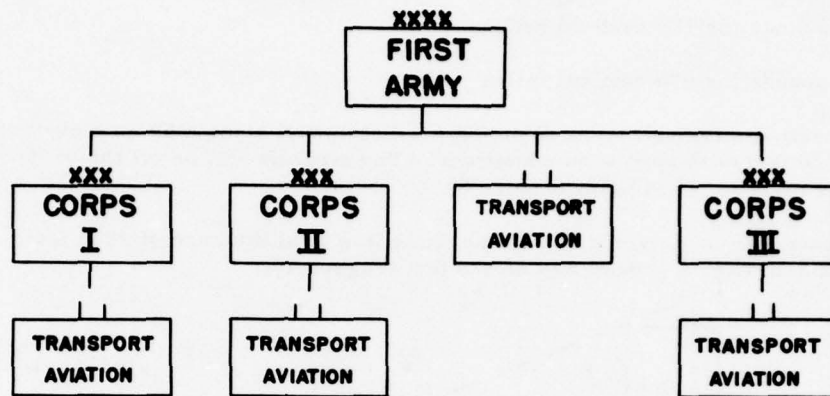


Figure 11. Proposed Assignment of Transport Aviation Battalions within Future Field Armies.

These transport aircraft battalions will be organized as follows:

They will consist of a headquarters and headquarters detachment and anywhere from two to seven of the various types of transport aircraft companies.

TYPE TRANSPORT AVIATION BATTALION

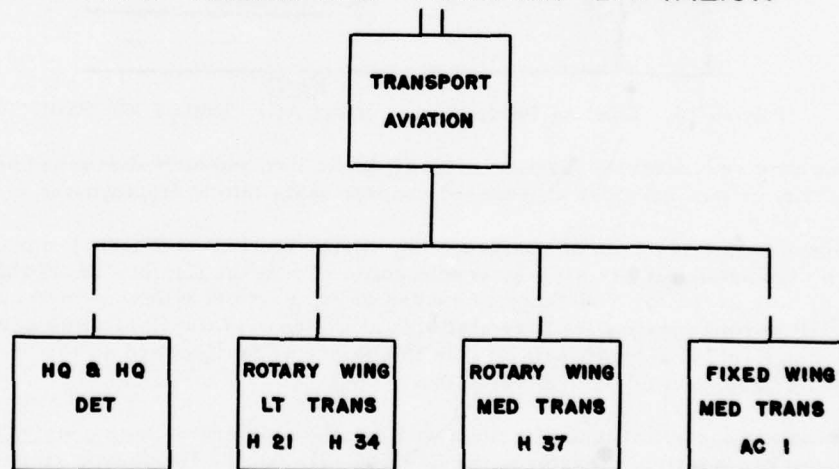
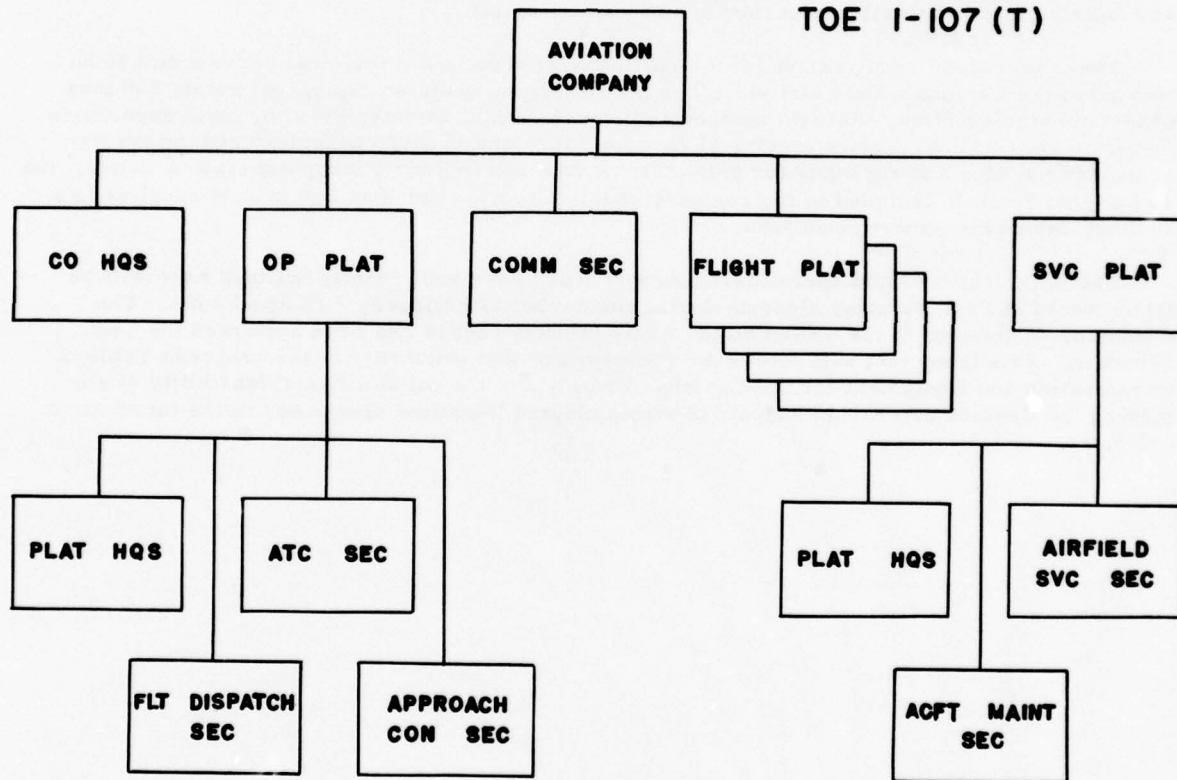


Figure 12. A Type Transport Aviation Battalion.

The mission of the Caribou company will be to augment the combat capability of the field army by providing battlefield and tactical airlift. Its broad sub-missions will be to provide support for airmobile operations and general logistical operations. It will receive its specific mission assignments from the Army Tactical Operations Center through the transport aircraft battalion headquarters. The Caribou company is organized in the following manner (Figure 13). It consists of a company headquarters, an operations platoon, a communications section, four flight platoons and a service platoon.

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The company headquarters provides normal command and administration for the company and supervises operations, maintenance and supply.

The operations platoon receives and processes requests for aircraft and operates the base airfield of the Caribou company. To do this, they have, in addition to their platoon headquarters, a flight dispatch section which receives and processes aircraft requests; an air traffic control section, which operates the control tower for the base airfield; and an approach control section, which provides the assistance necessary for aircraft to make instrument landings at the base airfield.

The communications section establishes the communications nets for the company, performs message center functions, switchboard operations, and limited electronic repair.

The four flight platoons provide the tactical and logistical air transportation in the performance of the company's assigned missions.

The service platoon provides the company with aircraft parts and performs organizational maintenance. To accomplish this, they have an airfield service section which provides refueling and crash rescue support. They also have an aircraft maintenance section which performs the organizational maintenance on the company's assigned aircraft.

At present it is proposed that this company be authorized 140 officers, Warrant Officers and enlisted men; 16 Caribou aircraft; and two L20 aircraft.

There is a clear requirement for a small general depot and a terminal service unit to be located at the Caribou's base airfield. The general depot would stock approximately 500 tons of fast-moving supplies. Actual tonnages and classes would be determined by local experience factors. The terminal service unit would receive, store and record cargo; load and unload aircraft; and package and rig loads for parachute or free fall delivery. Supported in this manner, the 16 Caribou aircraft assigned to the company could deliver as much as 200 tons of supplies in a 24-hour day under combat conditions.

The organizational and operational concepts that I have very briefly outlined here will be troop tested at Fort Benning, Georgia during the period 12 February - 12 April 1961. The Commanding General of the United States Army Infantry Center has been appointed the Test Director. This troop test will determine the adequacy and suitability of the proposed Table of Organization and Equipment for the Caribou company and the suitability and feasibility of employing the Caribou aircraft in support of airmobile and logistical operations in the future field army.

Section V. AIRBORNE FIRE SUPPORT

CAPTAIN T. G. GANNON

Technical Board Member, Air Mobility Committee, Airborne-Air Mobility Department

See Infantry Instructors' Conference Report (Classified Annex)

Section VI. PANEL DISCUSSION

Airborne-Air Mobility Department

We have discussed the 1960 Army Study Requirements and the Army Aircraft Requirements Review Board; the Boundary Layer Control C130; the AC1 Caribou Aircraft and Airborne Fire Support. At this time, our panel will answer any questions you may have on these subjects or other aspects of air mobility. Our panel is composed of:

Colonel Harrison, Director, Airborne-Air Mobility Department.

Lt Colonel Williams, Chairman, Air Mobility Committee.

Major Kolb, Chairman, Doctrine and Requirements Sub-Committee.

Major Doerfler, Chairman, Testing and Evaluation Sub-Committee.

Major Kennedy, Technical Board Member, Testing and Evaluation Sub-Committee.

Your questions please.

Section VII. CLOSING REMARKS

COLONEL WILLARD E. HARRISON

Director, Airborne-Air Mobility Department

We have enjoyed this opportunity to meet all of you and to discuss such a vitally important subject as air mobility with you.

In your capacity as Infantry instructors, you are serving as the Infantry's ambassadors to the Army's other service schools and to our sister services. The Airborne-Air Mobility Department stands ready to assist you in your very important jobs at any time. Please feel free to call on us for aid, not only during the remainder of your visit here at Fort Benning, but at any time after you return to your assignments.

CHAPTER 8
SPECIAL SUBJECTS DEPARTMENT PRESENTATION

Section I. NUCLEAR WEAPONS EMPLOYMENT

LIEUTENANT COLONEL GREGG N. JENNINGS

Chief, Nuclear Weapons Committee, Special Subjects Department

See Infantry Instructors' Conference Report (Classified Annex)

Section II. LAND NAVIGATION

FIRST LIEUTENANT NATHAN C. VAIL

Instructor, Map Reading Committee, Special Subjects Department

Until 1957, a rather unsuccessful attempt was made to teach basic trainees map reading, after which all map reading instruction was discontinued in basic combat training. Since February of this year, a 12-hour program of instruction, entitled Land Navigation, developed by the Human Research Unit here at Fort Benning, has been taught in basic combat training.

To facilitate conceptualization of the problem of preparing a program of instruction on land navigation, the research team created a model which included the type of movements soldiers of all branches could expect to be called upon to perform on the battlefield.

First, the combat, logistical, and administrative installations located within the battle position of the Infantry division were plotted on a map. From this, a list was made of typical missions involving land navigation which the individual soldier conducts when not accompanied by his leader. Some of these missions are: delivery of messages, wire laying, evacuation of wounded and movement of prisoners of war.

This resulted in the deduction of a composite performance requirement for movement of approximately one mile, including two changes of direction, resulting in arrival at an installation of oval shape 250 meters wide and 150 meters deep, which is roughly the area covered by a platoon in defense. This represents the typical mission of an individual soldier. This is the requirement on which land navigation is based.

Land navigation by definition is the combination of two techniques, dead reckoning and map-terrain association.

Dead reckoning consists of determination of direction by using a compass and determination of distance traveled by pacing. This technique is most effective during periods of reduced visibility or when navigating in areas sparse in terrain features.

The other technique, map-terrain association, consists of guiding on terrain features which have been selected in advance from a map. This method is most effective during periods of high visibility and in areas rich in terrain features.

Dead reckoning is stressed; however, the student is taught to employ map-terrain association to aid in cancelling errors of dead reckoning which may have accrued enroute.

The program of instruction is broken down into five separate periods.

PERIOD ONE: USE OF THE COMPASS (2 HRS)

The purpose here is to instruct the soldier through conference, demonstration, and practical exercise in the use of the compass.

In the first hour, the soldier practices reading and sighting the compass under both day and night conditions. The second hour involves practical work on a compass sighting course.

PERIOD TWO: DEAD RECKONING (4 HRS)

During these four hours the soldier is taught the principles of the dead reckoning navigation process. He learns to determine and maintain direction and distance in the field. Some 65 minutes are devoted to conference and the remainder to practical work.

PERIOD THREE: MAP USING (2 HRS)

Two hours are devoted to teaching the soldier the rudiments of map using. Since past experience has indicated that the private soldier will seldom, if ever, have a map of his own, the object here is simply to familiarize him with the essentials for foot movement which he would benefit by if given the opportunity to look at his leader's map before moving out. He is taught the basic elements of map symbols, contour interpretation, measurement of map distance, check point recognition and map orientation.

PERIOD FOUR: MAP TERRAIN ASSOCIATION (2 HRS)

The next logical step is to move to the field for map-terrain association supervised by an assistant instructor. Groups walk to previously reconnoitered sights from which typical check points can be seen. They compare the appearance of the check point on the map with its actual appearance on the ground.

PERIOD FIVE: NIGHT LAND NAVIGATION (2 HRS)

The men are broken down into two-man teams. They are then given a short orientation during daylight hours whereby the course is described and they are permitted to examine 1/25,000 scale maps of the area.

After orientation and briefing, the teams navigate from a starting point to an objective 300 - 600 meters distant and are critiqued on performance prior to navigation to a second objective over a similar distance. No maps or flashlights are used during this exercise.

The student is introduced to the subject in a classroom where he learns how to determine direction with the compass. He drills on a series of slides such as this. Slide legends include multiple-choice alternatives for the azimuth portrayed. Following the response to each slide, the correct alternative is indicated (Figure 1).

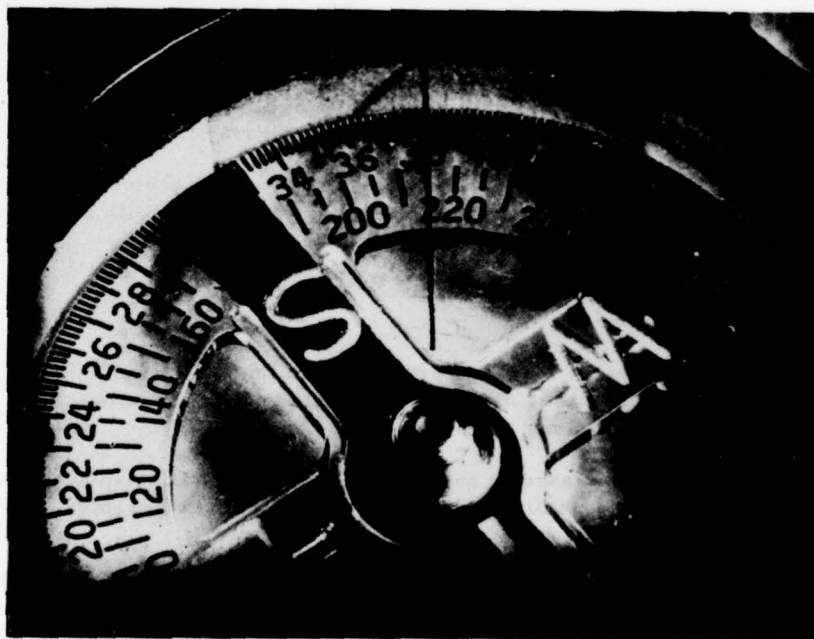


Figure 1. Compass Dial

He learns, during initial classroom instruction, how to hold, read and sight the compass. Many training aid slides and drill sessions are employed during this period (Figure 2).

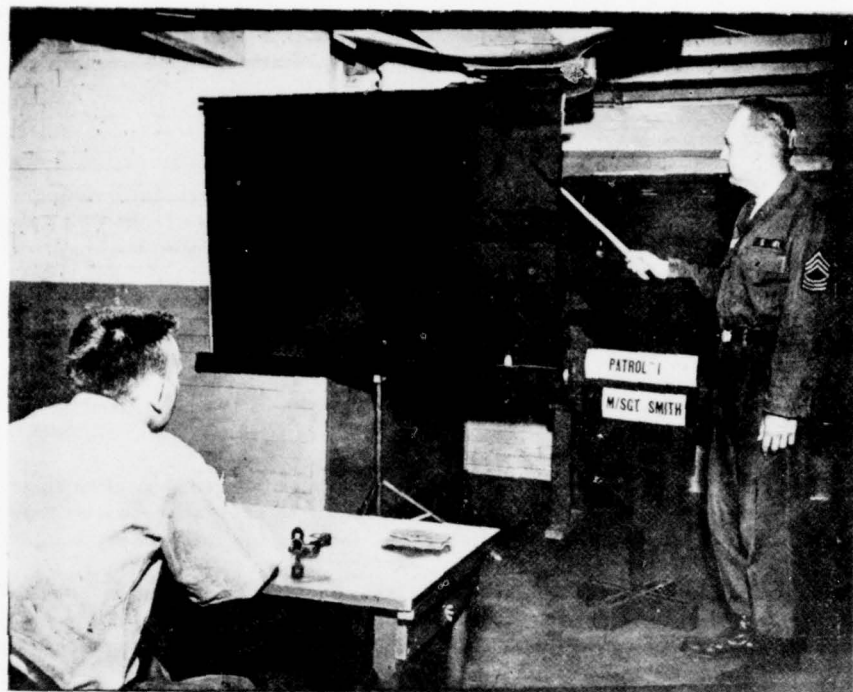


Figure 2. Typical Classroom Slide.

Thereafter, the student is immediately taken to the field to apply the elementary skill of determining direction by use of the compass. First, he drills in compass reading on a series of stakes. Then he learns how to select steering marks (Figure 3).

The student next finds out how many paces he requires to walk a given distance over flat, cleared ground; moderately uneven ground; and uneven ground topped with heavy brush. He applies this knowledge on another course of unknown length (Figure 4).

The student learns how to detour an obstacle so as to resume his course, maintaining direction and distance (Figure 5).

Finally, he is given a mission requiring application of both direction and distance requirements. Upon completion of this phase of training, he is capable of negotiating unfamiliar terrain by means of dead reckoning alone (Figure 6).

The student returns to the classroom to learn elementary relief, map symbols, and map measurement. One-fourth of the total training time is spent in the classroom. However, even classroom instruction is primarily applicatory in nature (Figure 7).



Figure 3. Use of Steering Marks In Field.



Figure 4. By Means of a Pace Course the Individual Soldier Determines His Standard

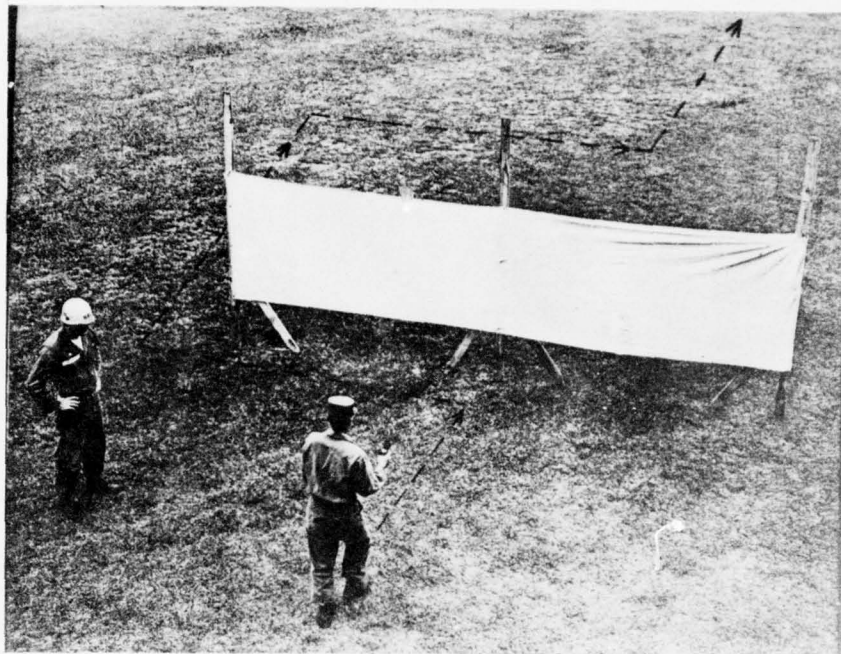


Figure 5. Detouring



Figure 6. Navigation by Dead Reckoning.

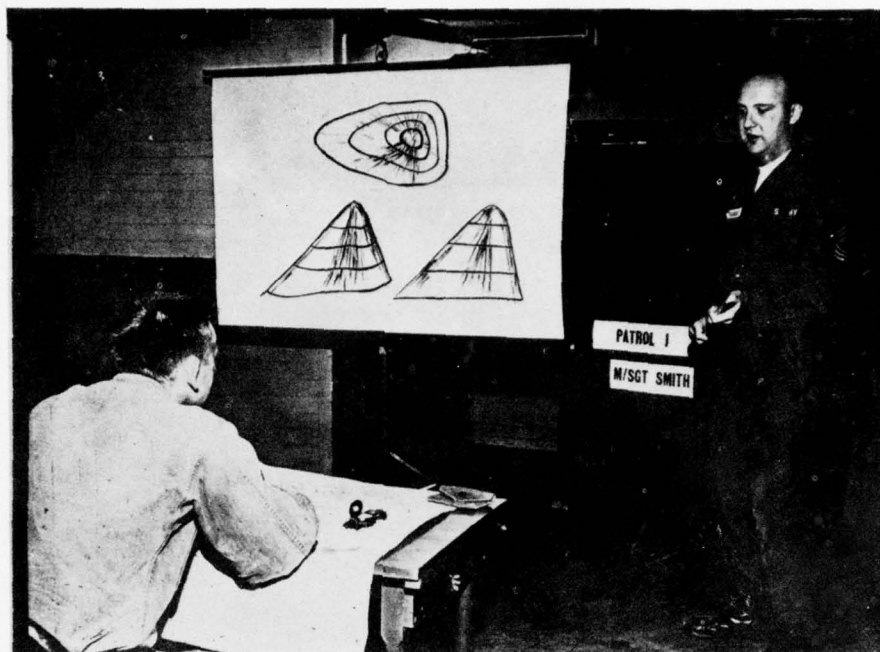


Figure 7. Rudiments of Map Using.

Once again in the field, the student learns to recognize terrain features on the ground and to relate them to the symbols which portray them on the map. *The usefulness of recognizable terrain features as check points permitting adjustment of dead reckoning is stressed* (Figure 8).

Finally, students in pairs are given a mission to navigate one kilometer over unfamiliar culturally undeveloped terrain at night. In preparation, they receive direction and distance information, and a description of terrain features which can aid in adjusting dead reckoning errors (Figure 9).

Each pair moves out, unaccompanied, applying dead reckoning and map-terrain association technique in negotiation of the problem traverse. As is customary throughout training, the pair is critiqued by cadre upon completion of the course. Training is concluded with completion of the problem (Figure 10).

I'm sure you'll agree that by means of land navigation we are teaching the basic soldier to move from one point to another; not with the aid of a map, but instead a compass and proper instructions. The teaching of land navigation instead of map reading is a far more reasonable approach. The private soldier will not have a map, as a rule, nor is the training program conducive to his thoroughly learning to use a map in the field. For this reason, the teaching of map reading was discontinued; and for a period of some two and one-half years the basic trainee was not taught to navigate at all in the field. Not only does land navigation teach him to navigate successfully, but it makes use of those instruments available to the private soldier.

You've undoubtedly noted that most of the training aids shown were especially designed for land navigation. There are some 95 slides and charts used to conduct the indoor training. As this large number of slides and charts would not only be time-consuming but costly for individual units to make, our Editorial and Pictorial Office is preparing samples of each of the slides



Figure 8. Map-Terrain Association

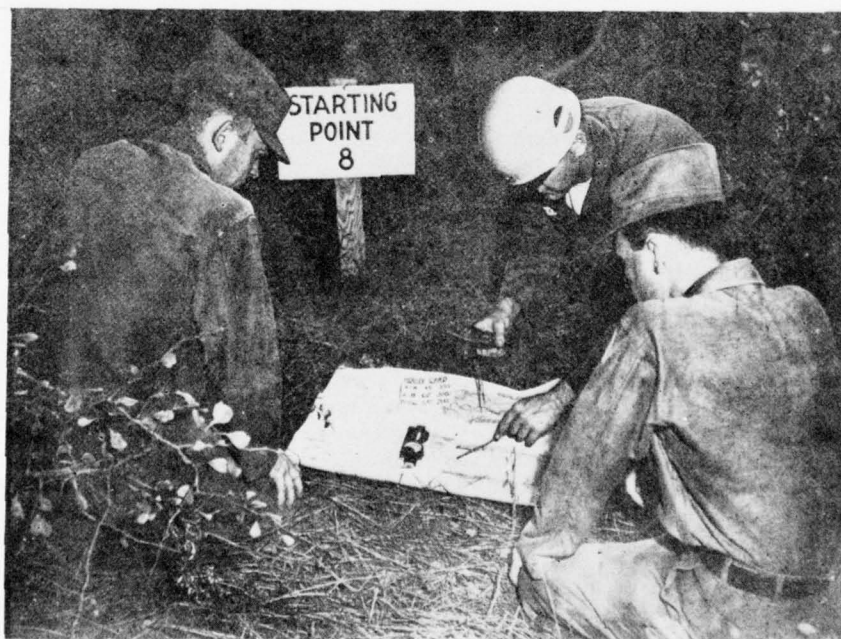


Figure 9. Navigation by Dead Reckoning and Map-Terrain Association.



Figure 10. Night Land Navigation.

and charts for inclusion in the Army Wide Transparency System. Training units will be able to draw them through local film exchanges.

Training literature currently in circulation includes a detailed research memorandum serving as a training text, and an Army subject schedule. We are presently preparing an Annex to FM 21-26, Map Reading, to replace the unofficial training text and subject schedule.

Only recently we monitored a staff study prepared by the 2d Division wherein these recommendations were made:

1. That the time be increased from 12 hours to 15 hours.
2. Elimination of many of the numerous, and therefore costly, score cards with an explanation that this can be just as easily accomplished orally. It was further recommended that those handouts retained be made a permanent type training aid that would stand up under constant use and adverse weather conditions.
3. Also, that official training literature be published in condensed form to replace the unofficial training text currently in use.

These are only a few of the comments and recommendations yet received from the field. More are yet to come as the program progresses.

Despite these recommended modifications and changes, based on limited reports from the field, land navigation training is proving quite successful.

Section III. INFANTRY BATTLE GROUP MEDICAL PLATOON

LIEUTENANT COLONEL GEORGE T. BRITTON

Chairman, Medical Committee, Special Subjects Department

The various presentations which you have heard in this conference emphasize the rapid changes that have occurred, and are continuing to occur, in combat concepts. Probably those of you who attended this conference last year have already noted that certain items discussed last year as new doctrine are now being modified, or even changed. During these next few minutes we will discuss the impact of these rapidly changing concepts on battle group medical planning. A change in the battle group medical platoon became official with publication of TOE 7-12D in February of this year. And FM 8-10, Medical Service Theater of Operations, published in November 1959, provides guidance in the employment of the medical platoon as it is now organized.

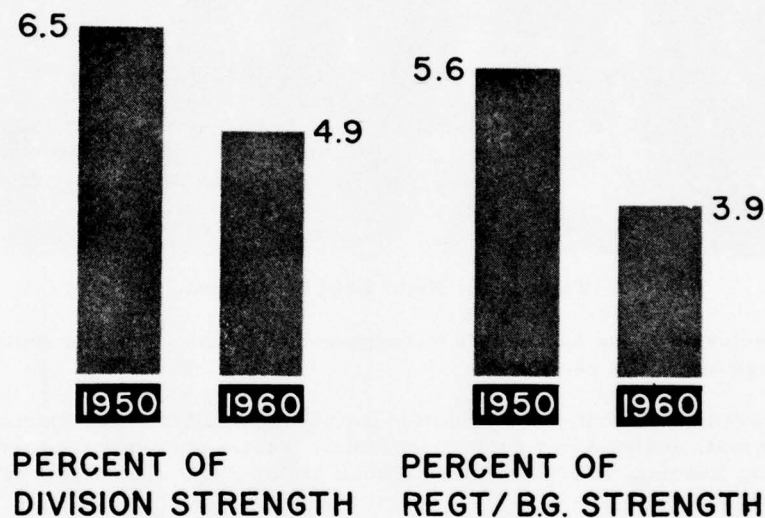


Figure 1.

The ROCID pattern which was adopted in 1957 provided fewer medical personnel to the Infantry than had been authorized in the past, as can be noted in Figure 1. The bars on the left represent the decrease of organic medical personnel within the division as a whole, and the bars on the right illustrate that most of this decrease was absorbed by the Infantry. The two doctors and fifty-one other medics represent less than 4% of the command strength. Within the strength ceilings which are in effect for all military units, any increase in fox-hole strength naturally results in a corresponding decrease some place else, usually among support troops such as the medical platoon. As a result, ROCID medical support is extremely austere. Rather than meeting peak casualty loads, it is not certain that current support will meet even average casualty loads. And any medical increase we might desire would be at the expense of combat spaces.

With the personnel reduction there has been a drastic increase in area of responsibility, illustrated in Figure 2. Doctrinal guidance in effect in 1950 indicated that a triangular regiment might occupy an area of 1482 acres, while our present teaching doctrine is that a battle group

be responsible for 12,108 acres. Dividing this area by the strength we find that now there are 8.4 acres per individual soldier, or 237 acres per medic.

ZONE OF RESPONSIBILITY DEFENSE

	1950 REGT	1960 B/G
FRONTAGE	3000 \pm M	8000 \pm M
DEPTH	2000 \pm M	6000 \pm M
AREA	1482 \pm ACRES	12108 \pm ACRES
PER INDIVIDUAL	0.4 \pm ACRES	8.4 \pm ACRES
PER MEDIC	7.0 \pm ACRES	237.5 \pm ACRES

Figure 2.

A comparison of these areas is further illustrated in Figure 3. Notice the position of the nearest doctor: in the past we felt that the battalion aid station had to be within one-half mile of the line of contact, in order to save lives, and here we see that the battle group aid station is from two to four miles from the forward edge of the battle area.

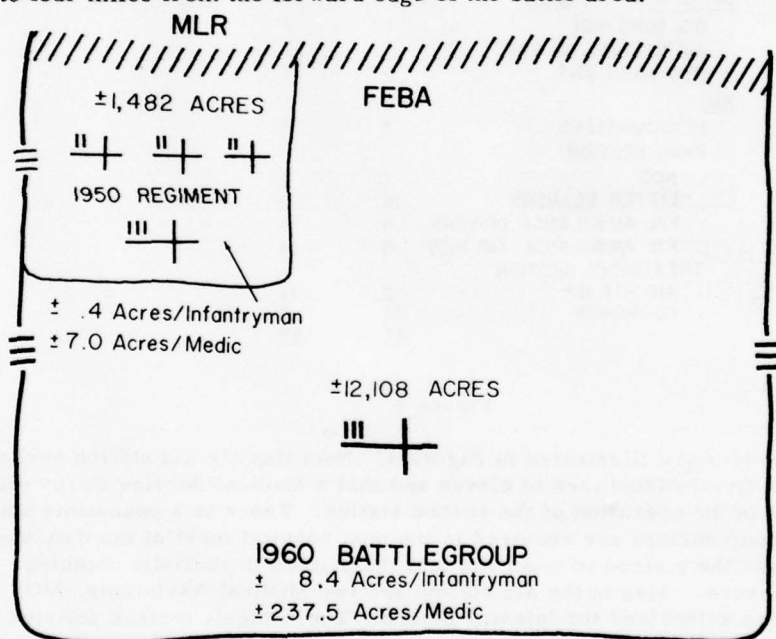


Figure 3.

The distances represented in this figure are critical to medical service. The original ROCID organization had one team of litter bearers and one frontline ambulance (litter jeep) per company. The average turnaround time for a litter team is one hour, so that the maximum number of litter casualties which could be evacuated back to a roadhead was one per hour from each company, for twelve hours or until the litter team dropped from exhaustion. And here we see that four healthy

soldiers are being used to evacuate one wounded soldier, which is not desirable ratio from a management standpoint.

With these distances, the shortest possible turnaround time for the litter jeep, under the most ideal situation, would be one hour. Therefore the highest possible medical capability of evacuating casualties to the aid station would be approximately two litter cases and three ambulatory cases per company per hour. And the single medic driving the litter jeep could not load or unload a litter case by himself: he would have to try to find someone in the vicinity to assist him.

With this large area there was a requirement to split the aid station. In 12,000 acres, there likely would be terrain barriers, such as a ridge of hills, or a river, and it would be desirable to have an aid station on each side. Or in attacks or retrograde movements, it is desirable to have leap-frogging aid stations in order to provide continuous service. But review of the table of organization revealed that there were only five medical soldiers for the aid station. Splitting the station would provide three at one site and only two at the other, for 24-hour operations.

Finally, addition of the fifth company, without additional medical spaces, required an entirely new medical concept. In general, the resulting changes can be summarized as greater mobility, and greater flexibility. Nearly all the medics ride now for the first time, instead of walk. And since the medical support continues to be austere, it is centralized under medical control so that it can be allocated in times of crisis to best support the unit mission.

B.G. MEDICAL PLATOON TOE 7-12R TOE 7-12D

OFFICERS:

B.G. SURG (HQ)	1	1
AID STATION DOCTOR	1	1
MSC ASSISTANT	0	1

EM:

HEADQUARTERS	3	3
EVAC SECTION		
NCO	1	1
LITTER BEARERS	16	0
F/L AMBULANCE DRIVERS	4	14
F/L AMBULANCE AID MEN	0	14
TREATMENT SECTION		
AID STA GP	5	11
CO AIDMEN	22	7
	<u>53</u>	<u>53</u>

Figure 4.

The specific changes are illustrated in Figure 4. Note that the aid station personnel have been increased from five enlisted men to eleven and that a Medical Service Corps officer has been added to assist in the operation of the second station. There is a peacetime bonus effect here; if all battle group doctors are required in the post hospital most of the duty day, there will still be an officer with the platoon to train and test the platoon in realistic combined-arms exercises and maneuvers. Also in the aid station are two Medical Assistants, MOS 911.30, which have never been authorized the Infantry before. These highly trained enlisted men are able to perform many highly technical surgical procedures, under the general supervision of a medical officer.

Litter jeeps have been increased from four to fourteen, and a second medical aidman has been provided in addition to the driver. The four-man litter teams have been deleted in favor of these two-man teams, so that the forward evacuation ratio is improved to two healthy soldiers evacuating five wounded soldiers.

By necessity, rather than by choice, the aidmen who served out in the companies, one in each platoon, have been reduced from twenty-two to seven. The platoon leader no longer has a resident medic, in his "hip pocket" so to speak, although the company commander has one in the vicinity of the company command post. All medical soldiers of the battle group have the same MOS 911, Medical Specialist, but the duty title of this aidman with the company command post is Senior Medical Aidman, with a skill level of .20.

There is one unfortunate source of confusion in TOE 7-12D: the second aidman who rides on the front line ambulance (litter jeep) is called by the duty title, Company Aidman, which represents a skill level of .10. The role of this ambulance attendant is described in paragraph 50 of FM 8-10, and he should not be confused with the traditional, full-time aidman, skill level .20, in the rifle company whose duties are described in paragraph 49c of the same manual.

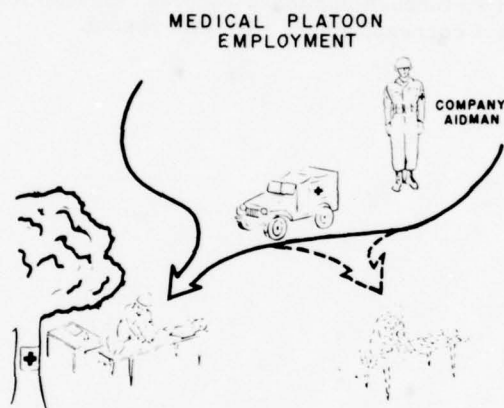


Figure 5.

Employment of the medical platoon can be visualized according to the diagram in Figure 5. There will be a full-time aidman close to the company command post who will operate a company aid post. He will treat the usual "sick-call" conditions that come to him for attention. Since in previous warfare diseases always have caused more casualties than wounds or injuries, he will screen the sick to determine those which might be treated on a duty basis, and those who must be evacuated. He will keep himself informed of the casualty situation by use of the company communication net, and he will direct any aid teams operating in the company area to the location of known casualties. These aid teams with their frontline ambulances will go forward of the company aidman to treat, pick up and evacuate the casualties back to the aid station. And as indicated in the dotted sketch, the aid station can be split into two locations, either in depth or laterally.

Employment of backup support remains unchanged: the evacuation of battle group aid stations by ambulances of the division medical battalion; and the planned use of helicopter ambulances, additional motor ambulances, surgical teams, or mobile medical units of field army.

It seems apparent that the changes discussed are a decisive improvement so that more casualties will be treated and evacuated, but various portions of this system require further evaluation.

What is the impact of the reduction in unit aidmen? Does our current first aid training qualify a rifleman for the life-and-death techniques expected in self-aid and buddy-aid? Although medical spaces have been deleted in favor of greater fox-hole strength, is there an overall increase in firepower when the combat soldier has to provide first aid for his buddy-----and in areas where the litter jeep cannot go, has to carry his buddy back to the roadhead? What is the impact of reduced medical support on individual morale? Should each squad have a cross-trained rifleman-aidman?

Does the medical platoon have the proper vehicles? How many of our expected casualties could be evacuated by nonmedical vehicles? Should nonmedical vehicles carry folded litters and blankets in their basic load? Should all troops be trained in the rigging of nonmedical vehicles as casualty carriers? Should the aid station have a mess and some tents, to hold trained combat personnel within the battle group who otherwise would be evacuated for minor illnesses or for combat exhaustion?

These and other questions deserve the attention of experienced Infantry leaders. We hope that you officers, in your various assignments, may be able to stimulate interest in these problems and perhaps in various exercises or staff studies, explore further areas for improvement. We welcome your comments, through command reports, through letters and articles to Infantry magazine, or through direct correspondence with this School.

Section IV. INTENSIFIED COMBAT TRAINING PROGRAM, OVERSEA UNIT REPLACEMENT SYSTEM

LIEUTENANT COLONEL BERNARD M. JASINSKI

Instructor, Training Committee, Special Subjects Department

In peace we must constantly prepare for war or national emergency. Our training must produce combat effective individuals and combat effective units--training is the life blood of preparedness. Proper application of the training management principles during peace time will insure combat effectiveness and success in war.

During the next 20 minutes we will discuss two new programs that have an impact on battle group training and pose new problems to the battle group commander and his staff. The first program we will discuss in the Intensified Combat Training Program (ICTP), and the second program to be discussed in the Oversea Unit Replacement System (OVUREP). By identifying some of the problem areas incident to those new training programs, it is proposed that you, the Infantry instructor, will gain background material to enhance your instruction encompassing these programs.

THE INTENSIFIED COMBAT TRAINING PROGRAM

The Army's present system for training new effective units which can logically be employed in combat requires approximately eight months training time. General Clark has stated that we must reduce this training time. To do this, a concept of an intensified training program was tested by the 2d Battle Group, 8th Infantry, 1st Division at Fort Riley, Kansas. The program was conducted during an eight-week training period under the title, The Intensified Combat Training Program; short title, ICTP.

Since the completion of the test of the ICTP concept, all STRAF units with the exception of STRAC, have been required to develop similar programs sufficiently detailed for immediate use in the event of an emergency.

ICTP is designed to reduce the training time required to produce a combat effective unit and begins when the unit has received 90 percent of its table of organization fillers. These fillers must have completed their individual training, basic combat, and advanced individual training prior to being assigned to the unit.

We can examine the program in more detail by using a prepared chart.

The eight weeks given to the ICTP are divided into training phases; Phase I, squad, section, and platoon training; Phase II, company training, while Phase III is further divided into Phase IIIa, battle group training, and Phase IIIb, battle group test.

Our ICTP chart reflects a reduction in training hours given to general subjects by devoting the major portion of training time throughout the program to tactical training. This is the key to the concept; emphasize tactical training, while stressing fundamental training of the individual, through integrated training.

Phase I, of two weeks duration, is devoted to the tactical training of the squad, section and platoon. Testing is conducted after the completion of each phase and for this phase, only the platoons are tested. However, it must be emphasized that the evaluation of squads and sections is made during the conduct of the platoon test. To make further economies in time, the platoons are tested side by side while the company goes through the test exercise.

Phase II, of two weeks duration, is devoted to tactical training at the company level. During this phase all elements of the battle group move to the field and support the tactical training of the companies. Testing of the companies is conducted by Brigade, using the opposing force concept. Aggressor is used to make the training and tests as realistic as possible.

Phase IIIa, of three weeks duration, encompasses the battle group level of training with continual emphasis placed on tactical training in the field. During this phase, division elements, which would normally support a battle group in its organization for combat, are with the unit.

Phase IIIb, of one week duration, is for the preparation and administration of the battle group test. Again, the testing of battle groups in the ICTP concept, as in the company test, employs the opposing force concept. In training two or more battle groups under this program, Phase IIIb includes testing of battle groups and a division maneuver.

INTENSIFIED COMBAT TRAINING PROGRAM PROBLEM AREAS

The unit testing the initial ICTP concept had a distinct advantage over subsequent units that may have to conduct intensified training under this program. The battle group received non-prior military service personnel as fillers and conducted an accelerated 14-week individual training program. Basic combat training and advanced individual training was reduced to seven weeks for each program for a total of 14 weeks as compared to the normal 16 weeks given to this training. The disadvantages of this accelerated program were far outweighed by the advantage of training the fillers on a "train and retain" basis. Ample opportunity was afforded commanders to evaluate the potential of the trainee and to begin early in their training to achieve team work and esprit de corps.

Units undergoing intensified training with filler personnel coming from training centers or other units conducting replacement training will not enjoy initially the advantage of knowing the new men nor the effectiveness of an established team.

Another problem is one of training areas. The nature of the training conducted demands the maximum in available maneuver area. It is doubtful that the test could have been conducted successfully at Fort Riley had more than one battle group been involved. The training of an entire division under this concept would complicate the program.

The problem of maintenance of equipment when in constant use over prolonged periods is one that taxes the organizational ability of the commander. He cannot be everywhere at all times, therefore it requires maximum supervision down through the chain of command. This responsibility must be placed directly upon the user to insure proper maintenance of equipment can be performed in the field. However difficult this problem of maintenance in the field may be, it is more realistic than is scheduled maintenance back in the garrison area, and it contributes to creation of a truly combat effective unit.

The reduction of time allocated for general subjects emphasizes the importance of practicing the fundamentals learned earlier in training. This can best be done through integrated training and by leaders seeing to it that proper methods are employed by the individual soldier. Do things as he was taught to do. Do them right the first time.

Furthering the proficiency of leaders by conducting schools or classes in the normal way is difficult in this program because of the intensified nature of the training. As one solution, additional training time may be gained by conducting tactical talks for these leaders during periods when their presence is not demanded elsewhere.

INTENSIFIED COMBAT TRAINING PROGRAM SUMMARY

When the test of the ICTP concept was complete, it was concluded that this is a highly effective program which does accelerate the unit training of a battle group.

The Infantry School is presently preparing an Intensified Combat Training Program for all units of an Infantry division based on the result of this test. This program should be available in the late fall of this year. Meanwhile, all STRAF units must have plans to implement the concept of the eight-week intensified combat training program.

THE OVERSEA UNIT REPLACEMENT SYSTEM

The Oversea Unit Replacement System was announced 22 January 1960. The objective of OVUREP (short title) is to provide an in-being system which will provide peacetime support of the Army doctrine of wartime unit replacement. The unit in this program is the battle group.

OVUREP encompasses the normal life cycle of a unit, from activation and organization, through training, an assigned mission in CONUS, overseas service, and return to CONUS and repeat cycle. Completion of this cycle takes better than two years and at present five battle groups are in the OVUREP system. The first unit to enter the system was the 2d Battle Group, 11th Infantry, 2d Division. It began training in April of this year. The last unit will begin its program in December of 1961 and completes the OVUREP cycle in February 1963.

The OVUREP program begins with the arrival of the A and B cadre, made up of key officer and enlisted personnel sufficient to organize and train the unit through basic combat training and advanced individual training. The C cadre, made up primarily of obligated tour officer personnel, report to the unit when it begins unit training.

The training of the individual soldier and the unit is conducted in twenty-nine weeks. A two-week leave period is provided at the completion of advanced individual training adding two weeks to the overall time necessary to complete the formal phase of training.

Subsequent to the completion of formal training, the unit will normally be given a training mission in CONUS for 13 weeks. This mission may include tactical exercises with STRAC units. The OVUREP unit is then sent overseas for 51 weeks. Upon completion of the tour, it will return to CONUS and begin the cycle all over. The cycle is completed with the return to the states, discharge of obligated tour personnel, reassignment of career Army personnel, and inactivation of the unit.

THE OVERSEA UNIT REPLACEMENT SYSTEM PROBLEM AREAS

The training of specialists during advanced individual training constitutes a problem for the commander. In most instances it is more realistic to train these personnel in schools conducted on a centralized basis at battle group or division level. It may be necessary for some to attend schools away from the unit. Many of the drivers, as an example, are also radio operators and will require training in both areas during advanced individual training if they are to be effective during unit training. The one solution to this problem may be additional training time for these individuals. Any other solutions will necessarily result in the individual missing a part of the advanced individual training with other trainees.

Another problem is the testing of the 46 rifle squads during basic unit training. There is not sufficient time in the program to test squads in turn, nor are there sufficient personnel to operate several test stations. One solution may be found in the ICTP concept where squads are evaluated during the conduct of platoon tests. This, too, would involve departure from prepared tests and make it necessary to request authority to develop stylized tests to meet the training objectives.

The promotion of personnel is of a concern to the commander in the OVUREP system. The cadre assigned the unit are sufficient to fill table of organization positions above E5. Conse-

quently, senior noncommissioned officers qualified for promotion to the next higher grade have little opportunity to demonstrate their potential for that grade. One solution is to assure these persons that the unit will receive their fair share of promotions within the division. However, personnel so promoted would properly be reassigned to another unit where a vacancy exists.

Another area of concern is the requirement for the unit to reorganize prior to departure for overseas so as to conform to the structure desired by the receiving oversea commander. Personnel not required in the program as a result of this stripping of the unit will be reassigned prior to the units' departure for overseas. This presents a personal problem to the individual as he may be affected by the reorganization.

THE OVERSEA UNIT REPLACEMENT SYSTEM SUMMARY

The problems discussed, and others, are being solved by battle group commanders. Many problems of this nature will be eliminated with continued refinement of the OVUREP system. The important fact remains that this in-being system of unit replacement is in effect now.

CHAPTER 9

COMBAT DEVELOPMENTS OFFICE PRESENTATION

FUTURE INFANTRY ORGANIZATIONAL AND OPERATIONAL CONCEPTS

COLONEL CYRIL D. STERNER

Chief, Combat Developments Office

See Infantry Instructors' Conference Report (Classified Annex)

CHAPTER 10

DEPARTMENT OF NON-RESIDENT INSTRUCTION PRESENTATION

CAPTAIN ROBERT ARTER

Assistant Operations Officer, Department of Non-Resident Instruction

During your visit to the United States Army Infantry School, you have seen many of the excellent facilities which exist to support the training of some 12,000 - 15,000 students who annually attend resident instruction. I am sure we are all impressed with the importance of this program to the Infantry School and of the necessity for insuring that the latest and most up-to-date instruction is presented to these students in keeping with the high standards of the Infantry School. The Infantry School also has another major responsibility which, in some instances, extends throughout the military establishment as well as into the civilian community. This major responsibility involves the preparation, production, and distribution of instructional material in support of the instruction of some 300,000 nonresident students. During this presentation we will discuss the nonresident programs in which these students participate, the specific types of instructional material prepared to support each, the methods of procuring this material and some of the benefits derived from their use.

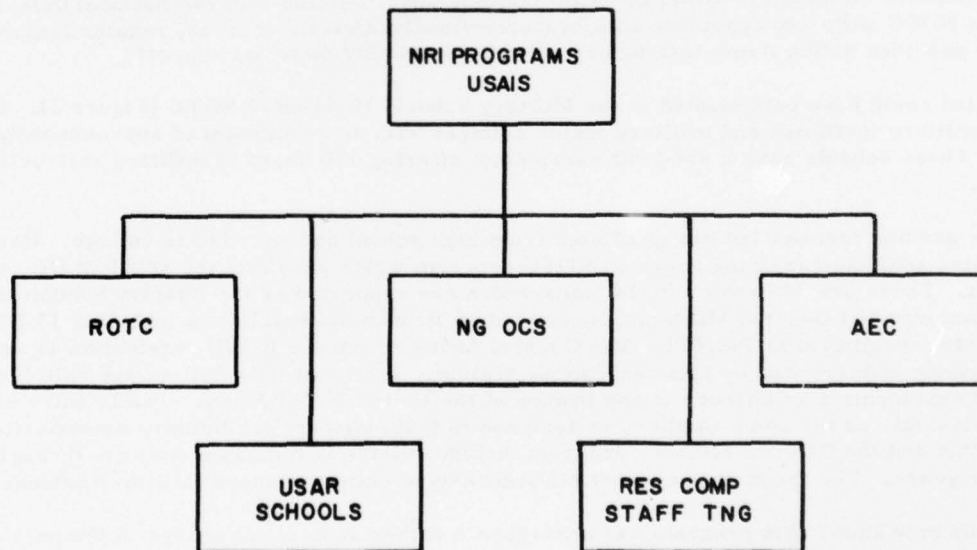


Figure 1.

There are five major nonresident programs supported by the Infantry School. These are: Reserve Officers' Training Corps, United States Army Reserve Infantry Schools, National Guard State Officer Candidate Schools, Reserve Components Staff Training, and Army Extension Courses (Figure 1). To enable you to better understand these programs, I should like to relate them to the student to be found in each program.

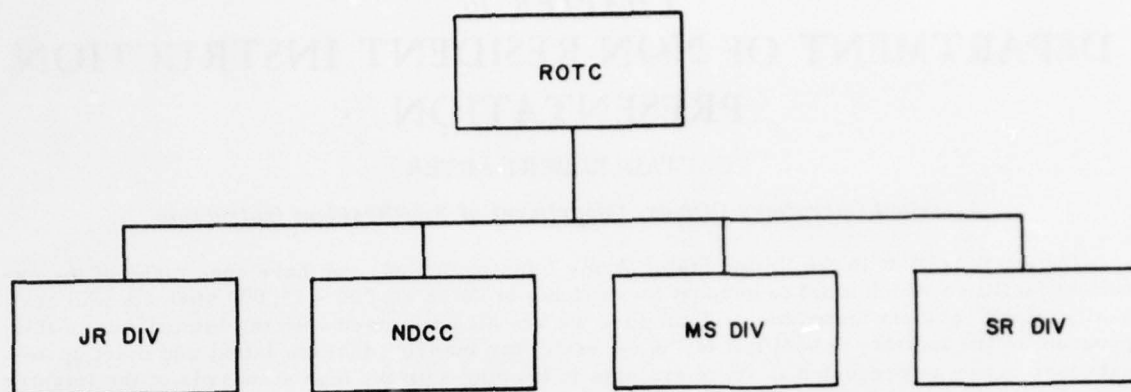


Figure 2.

Let's consider an average American boy whom we find enrolled in the Reserve Officers' Training Corps Program of his local high school (Figure 2). He's participating either in the Junior ROTC or National Defense Cadet Corps and will receive 96 hours of training in basic military subjects each year for three years. This training is designed to make him a better American citizen and to prepare him for possible service as an enlisted man in our Army. There are two types of units at this level of instruction, the regular Junior ROTC units and the National Defense Cadet Corps units, the latter training under Section 55c, the National Defense Act. The NDCC units are supported only by instructional material, whereas, regular Junior ROTC units are provided active Army instructors as well as training material support.

Our lad could have participated in the Military Schools Division of ROTC (Figure 2). It consists of military institutes and military junior colleges with an enrollment of approximately 14,744. These schools have a six-year curriculum offering 150 hours of military instruction per year.

Let's assume that our lad has graduated from high school and enrolled in college. Here he may receive additional training under an ROTC program which parallels the resident OC course in content. There are 248 senior ROTC units which are supported by the Infantry School; this number includes 203 General Military Science and 45 Branch Material units including 13 Infantry units. Total enrollment is 155,871. The General Military Science (GMS) curriculum is keyed to produce junior officers who by their education, training, and inherent qualities are suitable for continued development as officers in any branch of the United States Army. The Infantry branch-type curriculum, as the name implies, is designed to train officers for Infantry commissions, but both this and the General Military program include relatively the same subjects throughout their four years. The trend is to convert all branch-type units to General Military Science units.

As you may know, this program has undergone a rather substantial change in the past several months to make the program more acceptable to educators. Major changes have been removal of instruction in all crew-served weapons from the campus and permission for institutions, at their option, to substitute certain purely academic subjects for military subjects. This results in ROTC cadets graduating in the GMS program with variations in their military education, a fact which must be recognized in development of subsequent service schooling.

A senior ROTC student receives 90 hours of instruction each year for the first two years and 150 hours annually for his last two years. In addition, to qualify for a commission, he must attend a six-week summer camp. This is normally conducted between the third and fourth years

of the ROTC course. Last school year, 14,500 officers were commissioned through the ROTC program with about 2000 going into the Infantry. The Artillery branch received the largest number of officers, about 4000.

To support the ROTC programs there are over 50 subject schedules, several instructor manuscripts, and a new developments pamphlet prepared here. There are additional subject schedules and instructor manuscripts prepared by other service schools which are edited, published, and distributed by the United States Army Infantry School.

At present, there are seven instructor manuscripts written here at the United States Army Infantry School. Instructor manuscripts contain complete narratives for each hour of instruction supported. They are prepared on subjects wherein reference material may be scarce or there is a need for uniform instruction.

Within the past year we have also developed a number of practical exercises for use by instructors, particularly in those areas in which there has been a lack of up-to-date reference material available. This is primarily in the area of small unit tactics. Some of these practical exercises may be of interest to you, and you may find them to be, in some instances, directly useful to you. They are available in limited quantities in our department.

Additional assistance is rendered the ROTC program through liaison visits and procurement of special items such as plastic models, magazine subscriptions, and books. Certain instructional items are purchased and automatically distributed. Each senior school is allocated money annually from the ROTC Support Fund. This money is used to purchase items which are not available through supply channels. There are several Senior ROTC manuals and one Junior ROTC manual which are now published by the Department of the Army as text references. The United States Army Infantry School has responsibility for preparing those portions of the manuals which pertain to instruction presented at this school.

Let's assume that our hypothetical individual has graduated from ROTC and has been commissioned a second lieutenant, Infantry. For his first assignment he is called to active duty at Fort Benning where he attends the Infantry Officer Orientation Course. Under the Reserve Forces Act 1955, he may complete his six months' active duty requirement by attending IOOC and then perhaps further schooling. In this connection, he may be assigned at Benning until discharged. If he elects a two-year tour of active duty he's assigned according to the needs of the service upon completion of IOOC.

Let us further assume that our young man has completed his two years' active service and reverted to a civilian status. He has an obligation to remain active with the military. Additionally, he may wish to further his military education. He can accomplish both by enrolling in a USAR School (Figure 3).

What is a USAR school and how is it organized? A USAR school is conducted by Reserve officers for Reserve officers. The faculty consists of a commandant with his regular staff (S1, S3, S4) plus a special staff. The school is organized into departments based on branches with an instructor for each branch. A minimum of ten students is required to organize an Infantry department. Since everybody involved, both students and instructors, is a civilian, the material which is prepared for them must be complete to the last detail. A civilian instructor does not have library facilities to turn to -- and we don't want him to need them.

Beginning this fall, the Infantry branch will begin instruction in a new career course which parallels as closely as practicable the career course taught at Fort Benning. This is a five-year course of some 640 instructional hours which replaces the present company and advanced courses each of which was three years in length. The new course is progressive in nature.

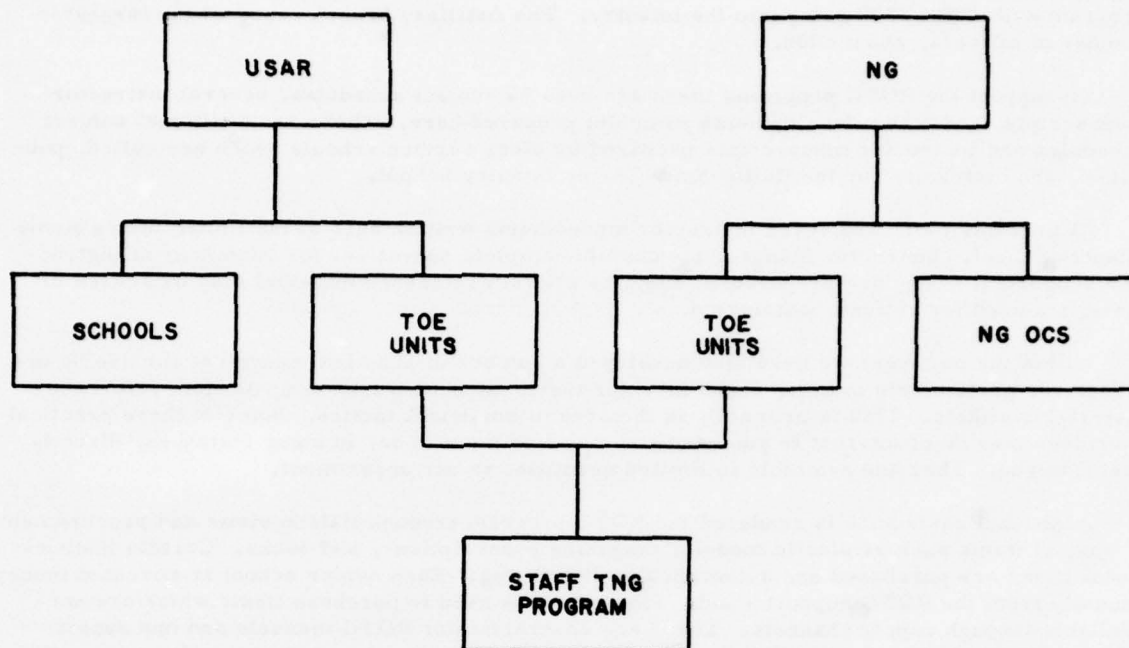


Figure 3.

Each year provides for two phases of instruction -- a reserve duty phase which consists of 48 hours instruction presented in the individual's home town or area; an active duty phase consisting of 80 hours of instruction conducted during a two-week summer camp session at a military installation. Upon graduation from this program, the student is eligible for enrollment in the Command and General Staff College USAR School.

A USAR problem normally consists of two parts -- an instructor and a student set. The heading contains the subject, time allotted, type of instruction, scope, subject schedule, special preparation by the instructor (included here are all details or items which the resident instructor has encountered in the presentation of this problem and which are passed on to the Reserve instructor), and special preparation by the student (the exact study assignment that is given resident students). At the end of each phase of USAR school instruction an examination, prepared by the Department of Non-Resident Instruction, is administered to each reserve student by the USAR school faculty.

We feel that many of you may find these USAR problems to be of interest and useful as reference material. They are, at the moment, completely up-to-date and reflect the latest teaching here at the School. Additionally, some of you may find them directly useful to you in presentation of instruction by yourself or others.

The Infantry School sends out a Monthly List of Instructional Material prepared at the School. I would like to suggest that you scan this document to see if there are any problems printed which may be of use to you. Additionally, Infantry magazine, an outstanding publication, contains a section titled, "New Training Literature and Films." This section indicates the titles and scopes of USAR school problems which have been printed at the Infantry School during a

specific period of time. The section specifies that certain of the listed USAR problems may be purchased for a nominal fee; others may be obtained completely free of charge. If you do not subscribe to this magazine, I urge you to do so. The second means by which you may obtain these problems is by ordering same from the Book Store, USAIS. Although this method involves purchasing on your part, the cost is nominal. I recommend that you visit the Book Store before you depart and secure one of their catalogs which lists the USAR school problems printed at the Infantry School.

Infantry USAR schools receive additional support through transparencies, special texts, and handbooks which are provided, plus liaison visits by personnel from the Department of Non-Resident Instruction.

Our hypothetical man, whom we are considering, could have elected to join a USAR TOE unit which received no direct support from the United States Army Infantry School. This point will be expanded momentarily.

Instead of joining the USAR, our individual could have joined a National Guard TOE unit organized by his home state. We provide no special material to support National Guard TOE units; however, they may order, subject to their availability of funds, any USAR problem from the Book Store.

Both USAR and National Guard TOE units are supported by a staff training catalog which is prepared and forwarded to all state adjutant generals and Army Corps Headquarters. This catalog contains a recommended list of USAR school problems for training Infantry division and battle group, armored division and armored Infantry battalion staffs. This training is conducted during the periods when the companies are drilling. Material is ordered in December, and shipped the next July. All National Guard material is paid for by National Guard funds, whereas USAR units receive material which is paid for by Infantry School nonresident instruction funds.

The Infantry School is the sole agency which supports the National Guard State Officer Candidate Program. At present, this program is being conducted by 46 states through the operation of 55 schools with an enrollment of 1899 students. The course is supported by 21 annexes containing 227 hours of instruction which parallel the resident Officer Candidate Course. These annexes are used by National Guard Officers to teach classes, normally held on weekends, to National Guard Officer Candidates. In addition, most states require their officer candidates to serve in a second lieutenant's job at a two-week summer camp. A commission gained through the NGSOCs program does not have to be recognized by the federal government; however, it normally is.

A typical NGSOCs problem is prepared for every period of instruction in this program. As with the USAR problems, each problem normally consists of an instructor set and a student set. The student set outlines the home study assignment that normally contains a pre-class requirement. Each phase of instruction is followed by an examination which is administered by the state and graded here at the Infantry School by personnel of the Department of Non-Resident Instruction. Within 48 hours after receipt of these exams, they are graded, recorded, and on their way back to the appropriate state schools. NGSOC schools are also supported by transparencies, special texts and liaison visits.

As with the USAR problems and the practical exercises mentioned earlier, those National Guard problems may be of interest to many of you. We have just revised this program and they are currently completely up-to-date. They have been particularly helpful to ROTC instructors and some of you may find them to be useful in presentation of instruction required by you. At the present time, these problems are available in very limited quantities only in our department although the Book Store plans to soon print certain selected ones.

Suppose now that our selected individual has grown older. Perhaps he has served several years with a USAR or National Guard TOE unit. Due to his family and business activities, he is no longer able to regularly attend meetings at the armory. However, he wants to keep active in the military and to gain retirement benefits. We have the solution to his needs -- participation in the Army Extension Course program. Army Extension Courses provide a progressive nonresident course of military instruction for all components of the Army (Figure 4).

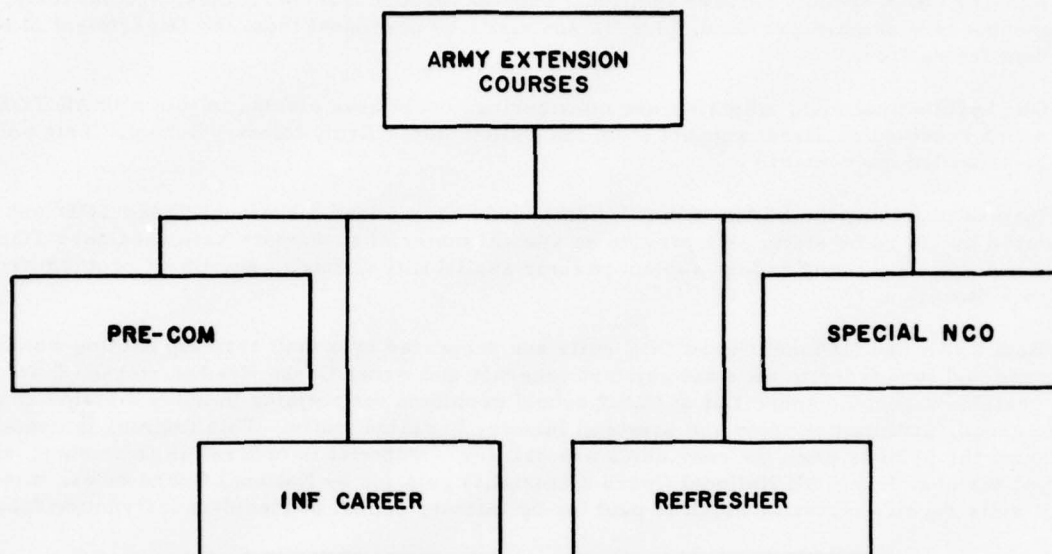


Figure 4.

The Infantry School prepares and administers four extension courses. The Army-wide pre-commission which generally parallels the resident Officer Candidate Course, and, at the moment, a company and advanced extension course. A POI is currently being staffed which contains essentially the same material as that included in the USAR school POI which we have just discussed. Development of these two courses in close parallel will permit maximum interchangeability between the two programs and add flexibility to the means whereby an officer not on active duty may obtain a branch education. In recognition of the need for current instruction in new tactics and techniques for those individuals both in the active Army and the Reserve Components who have not been able to come to a service school, we have developed a refresher extension course closely paralleling the resident refresher course. We felt that our target here was a man who was motivated to bring himself abreast professionally of current developments and we have emphasized providing him with instructional material in a manner designed to facilitate this. Last, we have developed a special Noncommissioned Officer course which was written with the NCO specifically in mind, with particular recognition of the concept of increased leadership and supervisory responsibility attached to the new pay grades. This course, which is 20 hours in length emphasizes leadership principles and problems of command as they confront the Noncommissioned Officer. Additionally, there is a lesson on the duties and responsibilities of the First Sergeant and Sergeant Major. Incidentally, we found a dearth of material on this subject and to supplement what little was available we assembled a panel of senior Noncommissioned Officers from the Infantry School and units of the 2d Infantry Division to obtain the benefit of their practical experience. This we found to be most rewarding. We feel that

completion of this course will be helpful to any Noncommissioned Officer, regardless of grade or branch and would like to suggest that you make your Noncommissioned Officers aware of this course and encourage them to enroll.

In addition to enrollment for a complete course any officer on active duty may enroll for any specific subcourse. There may be a time when you will wish to enroll in one of our subcourses in some selected subject such as Nuclear Weapons, Review of Infantry Weapons, Commander's Estimate of the Situation, or some other phase of instruction you would like to review in some detail. We have discussed the five nonresident programs of the Infantry School and some of the bonus effects to be obtained from use of the instructional material prepared in support of these programs. I should now like to very briefly discuss the Infantry Schools organization to administer this program, emphasizing those aspects which may be of interest to you (Figure 5).

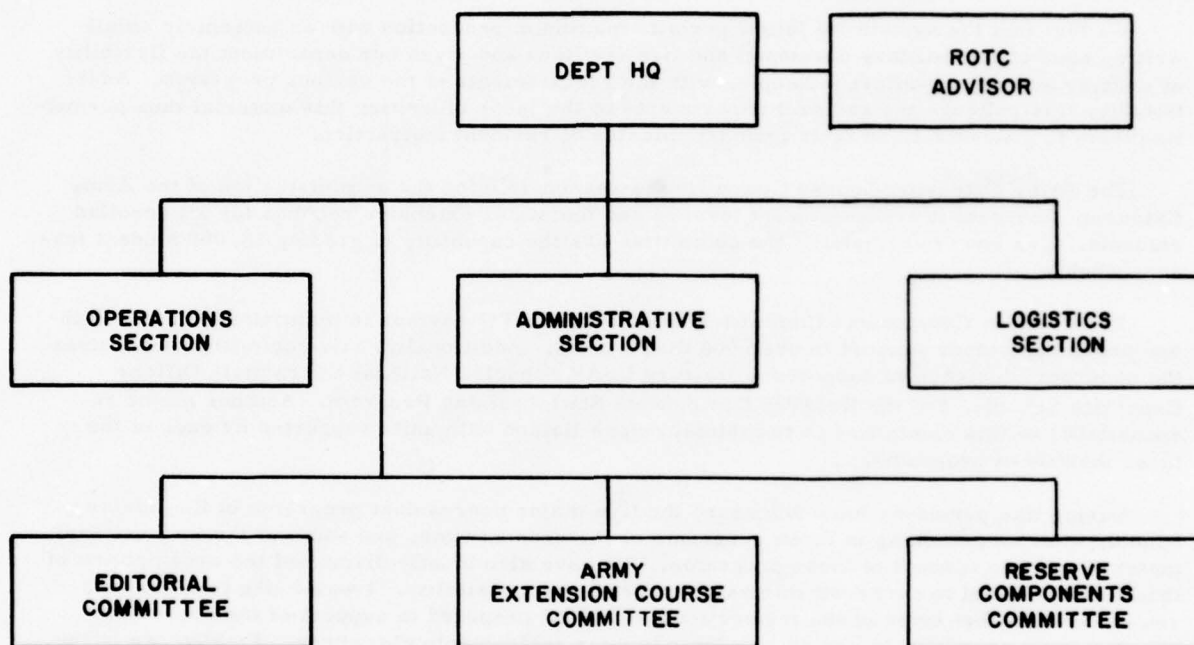


Figure 5.

Assigned to the department headquarters is a colonel, who is the Director, and a lieutenant colonel, Deputy Director. The Director in this instance wears two hats as he is also the Infantry ROTC Advisor to the Commandant of the Infantry School.

The operations section has the responsibility for programming our writing efforts and the printing of our instructional matter in keeping with the requirements of the various programs. This requires close coordination with all committees of the department and with other activities of the Infantry School such as the Printing Plant. To give you an idea of the scope of this operation, the department's printing requirements constitute about 40 percent of the Printing Plant load.

The administrative section performs the normal administrative duties of an S1 office. Additionally, classified documents control is a responsibility of this section.

The logistics section performs a dual function. It is responsible for distribution of nonresident material to individual students in the case of Army Extension Courses and to the instructors in the other nonresident programs. It also serves as the supply agency for the department.

The editorial committee is the heart of our operation. The organization of this committee and the system for writing nonresident material here at the Infantry School may be of interest to you. Our writers, following scopes and outlines previously approved, work in close coordination with resident instructors in development of instructional material. We write our drafts based upon resident manuscripts, instructors' notes, discussion with the instructor concerned, and actual attendance at resident classes. After informally coordinating with the department concerned, drafts are forwarded for formal review. Resident departments review the proposed material for accuracy of doctrine, school position, and to insure that classification restrictions are observed. Resident departments are not asked to comment on format, phraseology or grammatical construction although they may do so if they wish.

We feel that the system we follow permits maximum production with an extremely small writing staff of ten military personnel and five civilians and gives our department the flexibility of shifting our writing effort in keeping with the requirements of the various programs. Additionally, this relieves the resident departments of the labor of writing this material thus permitting them to concentrate on their primary mission of resident instruction.

The Army Extension Course Committee is responsible for the administration of the Army Extension Courses; it grades student lessons and maintains extensive records for all enrolled students. For your information, the committee has the capability of grading 18,000 student lessons weekly.

The Reserve Components Committee assists the ROTC Advisor in maintaining liaison with and providing proper support to over 600 ROTC units. Additionally, this committee supervises the programs designed to support the Infantry USAR Schools, National Guard State Officer Candidate Schools, and the Reserve Components Staff Training Program. Another major responsibility of this committee is to maintain close liaison with units supported by each of the three mentioned programs.

During this period we have discussed the five major nonresident programs of the Infantry School, what we are doing in these programs at the present time, and some of the instructional material used in support of these programs. We have also briefly discussed the organization of the Infantry School to carry out this very important responsibility. I would like to leave with you the thought that some of the instructional material prepared in support of the nonresident program may be helpful to you now or later in your assignments elsewhere. Finally, we in the Department of Non-Resident Instruction stand ready to assist you in any way we can now or in the future.

CHAPTER 11

EDITORIAL AND PICTORIAL OFFICE PRESENTATION

CAPTAIN THOMAS E. AARON

Special Editing Section, Editorial and Pictorial Office

I am pleased to talk with you today because I know that the Editorial and Pictorial Office can be of great assistance to you in carrying out your instructional responsibilities and I want to acquaint you with the many services we offer.

Most of your contact with the Infantry School when you are away from Fort Benning will be through this office. If you write for information and materials, we will probably be the ones who handle your request. If you have been receiving materials from the School, we, in all probability, have been the ones who have been sending them to you. Thus, it might be well if we reviewed the organization and capabilities of the Editorial and Pictorial Office so you will understand what we are doing--what we can do to help you in your job and, conversely, what you can do to help us.

Unlike the instructional departments of the School, we do not conduct or present demonstrations to which other people at Fort Benning or the public might be invited. Yet we support every department in the School, and we assist the Commandant in fulfilling a number of important responsibilities to the United States Continental Army Command and the Department of the Army.

Within the organizational structure of the School, the Editorial and Pictorial Office operates under the direct supervision of the Deputy Assistant Commandant. It is a staff office, and like other staff offices, such as the Combat Developments Office, the Operations Office, and the Office of the Director of Instruction, it supports all the academic departments of the School. We have an administrative office, a training aids section, a training literature section, a training film section, a special editing section, and an Infantry magazine section. We also supervise the Infantry School Book Store and the Army Field Printing Plant. I should like to briefly discuss each of these sections in turn.

The administrative section is a clearing house for Army-wide requests for instructional material produced at the School. It publishes a Monthly List of Instructional Material, which is sent to approximately 300 addressees, including military advisory groups, military missions, senior military advisors of the National Guard, commanding generals of Army Reserve Corps units, and senior Infantry instructors at other service schools. I am sure that you are all familiar with this periodical. Its purpose is to provide information laterally within the Army to schools and agencies which are responsible for the conduct of instruction. Upon request, we furnish one copy of each item in the Monthly List to those authorized units and individuals that desire them. Additional quantities may be purchased from the Book Store.

The administrative section also receives and processes all requests for information or instructional material. When necessary, the requests are sent to appropriate instructional departments for information on which to base replies. I might add that any such requests should be addressed to the Commandant, Attn: Editorial and Pictorial Office. Your requests will be answered as quickly and as completely as possible.

I should now like to take a brief look at the training aids section, which was recently established as a consolidated facility to support all resident instruction at the School. This section consists of three branches: a graphics branch, a graphic photography branch, and a sound branch.

The graphics branch performs work which varies from simple organizational charts to very complicated color illustrations and cutaway views of weapons. Draftsmen, illustrators, photo-retouchers, and other specialists are required here to provide art support for Department of the Army training literature, graphic training aids and transparencies, Infantry magazine, charts, special publications, and Vugraph transparencies for resident instruction.

The graphic photography branch prepares various types of artwork, which range from simple line drawings to complex technical illustrations. This branch, as its name implies, uses photography as much as possible in the preparation of visual aids. The slides you are now viewing and many of the visual aids used this week were prepared by this unit.

The sound branch provides sound, projection, and recording service required in support of all Infantry School instruction. The projectors and other audiovisual equipment used for this conference were provided by this branch.

Eventually, the training aids section will have a fourth branch -- the devices branch, which will fabricate graphic, mechanical, wood, plastic, electronic, electrical and metal training aids. However, due to budgetary limitations, the capability of this branch will remain quite limited during fiscal year 1961.

Before leaving this section, I would like to add that the Naval Training Device Center project officer for the Infantry School is presently assigned to the training aids section. He is responsible for coordinating requests with the Naval Training Device Center.

The training literature section is responsible for coordination in five general areas. First, the section coordinates the preparation, editing, and processing of all Department of the Army training literature for which the School is responsible. This includes more than 50 field and technical manuals, 10 ROTC manuals, and 55 subject schedules, in addition to many circulars, Army training tests, and Army training programs. The section also coordinates the preparation, editing, and processing of an Intensified Combat Training Program for the Infantry division, as well as all special texts which are used specifically to support resident instruction at the Infantry School. Another important function of this section is to coordinate the School's review of Department of the Army training literature which has been prepared by other service schools and agencies. Finally, the section coordinates the Infantry MOS proficiency test item program (Enlisted Evaluation Program), which consists of 30 tests of 150 questions each for each skill level in five different MOS's.

The original writing for these projects is done in the instructional departments; however, professional guidance is provided by civilian editors of the training literature section during this phase of preparation. After drafts have been written and submitted to the Editorial and Pictorial Office, this section performs the necessary editing and rewriting to insure proper standards, uniformity, and style.

Following this procedure, draft manuscripts are prepared, and, in the case of field manuals, training manuals, and training circulars, sent to other schools and agencies for review and comment. As an aside, I might mention that we occasionally learn that other service schools call upon the Infantry instructors there to review literature coming from the Infantry School. This literature is sent to other service schools for the comments of the school concerned and not the Infantry instructors serving there. If you ever have this situation happen to you, we suggest that you tactfully try to inform your school of this fact. Manuscripts of other training literature projects are prepared and forwarded to Continental Army Command for review and approval. Exceptions to this procedure are MOS proficiency test items, which are forwarded to the enlisted evaluation center, and Infantry School special texts, which are locally approved. Final draft manuscripts of training literature projects sent for field review

are prepared, based on the comments received. These then are edited and rewritten by the training literature section and forwarded to USCONARC for approval. Manuscripts approved by USCONARC are sent to the Department of the Army for printing and distribution. Experience has shown that the time required to complete a weapons manual or a nontactical manual is approximately 12 to 14 months. This time is increased to approximately 18 to 24 months for tactical manuals, and is shortened to about 10 months for supporting literature, such as ATP's, ATT's, and Army subject schedules.

The magnitude and importance of the functions assigned to the training literature section are evident in view of the great number of training publications for which the School is responsible, the purpose for which they are prepared, and the constant requirement that they be kept up-to-date with changes and revisions. In this regard, we urge that when you note errors or omissions in any Infantry training literature, you inform us so that we can take the necessary action. Training literature constitutes the basis for Infantry instruction throughout the entire Army. In peacetime, this material reaches hundreds of thousands; in time of war it affects millions, and it must be the very best that can be written.

Next, we'll look briefly at the training film section. This section supervises and coordinates all Department of the Army training films and film strips for which the School is responsible. The number of films varies since the requirement for new films stems largely from the development of new weapons and equipment and new tactics or techniques for their employment. The requirement may be generated by Department of the Army, Continental Army Command, or by the School or units in the field.

The material to go into each film is developed by the instructional departments of the School, and a technical advisor is assigned for each film by the department responsible for the subject to be covered. When an outline of the subject has been drafted, the training film section arranges for a professional script writer to come to the School from the Army Pictorial Center at Long Island City, New York. The writer and the technical advisor, with the guidance and assistance of the film section, then produce a treatment plan. When this has been approved by the School, a final script is prepared, and the section arranges for a camera crew from the Pictorial Center. Normally, most of the filming is done at Fort Benning under the supervision of the film section and the technical advisor. Occasionally, some footage must be shot in location elsewhere. When the film has been edited, an answer print is returned to the School and the section arranges for its review by representatives from all the academic departments. After approval at Fort Benning, the film is forwarded to Continental Army Command and the Department of the Army for final approval and for printing and distribution by the Army Signal Corps. Three films have recently been completed and approved for distribution, and will be available to the field in about three months. These films are TF 7-2872, Ranger Training; TF 7-2868, Rifle Company and Platoon in the Defense; and TF 7-2969, Reinforced Rifle Company in the Attack.

Once again, we request your assistance in our revision of training films. If you note errors or deficiencies in our films, or if you have any ideas or suggestions about new training films, we shall appreciate hearing from you.

We shall now consider the special editing section. This section has a number of editing and writing responsibilities. One of the most important tasks is the preparation of the Commandant's Periodic Letter to the Field. To keep senior Infantry commanders in the field advised of the latest trends and developments and to provide for an exchange of information and thinking between the School and the field, the Commandant sends a personal, periodic letter to senior commanders in the Active Army, the National Guard, and the Army Reserve. The special editing section, after receiving the material and guidance, prepares individual letters and an attached list of items of interest for each addressee. At the end of this briefing you will be given a copy of the items of interest that were sent with the current letter.

Another of the important functions of this section is the Infantry Advisory Board. Composed of 25 general officers with wide Infantry experience, the board studies and comments upon topics of current importance to the Infantry, advises and critiques the School on certain key issues, and provides guidance to Infantry magazine. Letters to board members are prepared by this section for the Commandant's signature, and replies, comments, and suggestions from board members are monitored by the special editing section. Periodically, articles for Infantry magazine are submitted to board members for comment and consideration. After receipt of their replies, articles encompassing their thoughts and opinions are published in the magazine. A recent example is "Cornerstone for Combat Power," an article dealing with the basic training program, which was published in the April-May issue.

All special brochures required by the School, such as the Guide for Students and the visitor's guide, are edited and prepared by this section. It also assembles and prepares the quarterly Infantry School Notes, which go out over the Assistant Commandant's signature to you and others -- some 1300 Infantry instructors in all -- throughout the Army. These notes are designed to keep you up-to-date on new developments and instructional material and techniques of the School. Special editing section also maintains biographical files and prepares speaker introductions for all speakers who come to the School. The section is also called upon to prepare speeches for the Commandant and the Assistant Commandant. A final function of this section is to prepare articles on important subjects for publication in service journals and other publications.

Another function which falls under the jurisdiction of EPO is the publication of Infantry magazine. I would like to take the next few minutes to discuss with you what it is, what Infantry can do for you, and what you can do for it.

Infantry is an official bimonthly publication of the Infantry School and is the professional journal for Infantrymen. It is also a non-appropriated fund magazine with a current circulation of 15,000.

In accomplishing its mission of serving Infantrymen throughout the world, it provides information on current doctrine and new developments as they occur. I mentioned previously the one- to two-year time lag in the publication and distribution of training material once doctrine has been established in a particular area. Infantry takes up this lag and provides a means whereby the man in the field can keep his professional knowledge up-to-date in the absence of field manuals and other training literature.

In addition to providing current professional information, Infantry also serves as a forum for the exchange of ideas between Infantrymen throughout the world and thereby serves as a forum for progressive military thought.

We strive to hit a broad spectrum and have something of particular interest for all readers in each issue. In doing this, we try to include articles covering the following topics: organization, tactics, weapons, techniques, equipment, and doctrine.

One unique feature of Infantry is that in it controversy is allowed--not only allowed but solicited. It is the only official publication to do this. Recently, the magazine featured an article entitled, "Is the Paratrooper Obsolete?" which is a good example of the type material we normally publish in this category. You can imagine the amount of spirited response we received from both "straight legs" and "airborne troopers" as a result of the article. We feel that controversy is the soul of progress and by exploring both sides to a question all of us cannot help but learn and improve.

You can help the magazine in three ways: First, by sending us ideas on how we can improve the magazine. Second, we need good thought-provoking material for publication. We want all the stimulating thought we can get and we will pay for articles according to their quality and length. Third, you can help by encouraging officers and noncommissioned officers to subscribe to Infantry. If we can get all career Infantrymen to support the magazine, I am confident that we can make it the most authoritative and influential military journal in the country.

We believe that a subscription to Infantry should be regarded by career Infantrymen as an investment in the future of their branch and in their own future as well.

Each of you has a copy of the magazine on your desk and in it you will find a subscription card. I encourage you to subscribe and should you desire additional information regarding the magazine, I will be glad to answer your questions at the end of the period.

Finally, I want to mention briefly the Army Field Printing Plant and the Book Store.

The Printing Plant is a sizeable operation. It is authorized two officers, 52 enlisted men, and 54 civilian employees -- more than double the 51 persons authorized for the remainder of the Editorial and Pictorial Office. This plant produces more than 90 percent of all the printed material required for the Infantry School's resident and nonresident instruction. It also produces material for Third Army units, which include the Infantry Center. In an average year it will reproduce more than 180 million individual sheets of printed material.

The Book Store consists of a retail store and a mail order business. The Book Store carries stationery, instructional aids and supplies and other items needed by the students here at the School. The mail order items include books, and as I mentioned earlier, the manuals, tactical problems, and other training literature produced at the School.

Gentlemen, that concludes my general orientation on the Editorial and Pictorial Office. If you have any questions as to how you can obtain School publications or material, I would be pleased to try to answer them. Also, I would be pleased to have you visit our "shop" while you are here so that you can meet the people with whom you correspond. We are trying to serve you and to furnish you with the information and materials which you need to do your job. We can do our job better if you will let us know your needs and your suggestions for improving our materials and our services.

CHAPTER 12

INSTRUCTOR TRAINING SECTION PRESENTATION

CAPTAIN BERNARD D. WHEELER

Instructor, Instructor Training Section

CAPTAIN JOHN C. ROYLOS

Instructor, Instructor Training Section

Horace Mann, one of the great educators of this country, said: "The teacher who is attempting to teach without inspiring the pupil with a desire to learn is hammering a cold iron." This is why it is not enough to be an expert on your subject; to teach effectively you must also be an expert instructor.

To understand "How We Teach" and the aids available to assist us, it is first necessary to understand "Why We Teach," and this, briefly stated, is our mission:

The mission of the United States Army Infantry School is to prepare Infantry officers and selected Infantry enlisted personnel to perform those duties which they may be called upon to perform in time of peace and war. The mission may be more easily remembered by extracting these seven words: Prepare to perform in peace and war. Notice also that this must be the mission of the student in training. Because "Man" remains the ultimate weapon in combat, we place emphasis on the art of command and leadership.

An understanding of how we put these words into action may give you new ideas to make your own instruction more effective. In the final analysis, your mission as Infantry instructors is almost identical to that of the instructor at the Infantry School. Your task, however, is even more challenging because in most cases you are teaching a man who has had limited Infantry experience. Your instruction may very well be the only contact your students will have with the Infantry. The quality of your teaching, the "selling by telling" job that you perform, will depend on how effective you are from the platform.

THE UNITED STATES ARMY INFANTRY SCHOOL PHILOSOPHY OF EDUCATION

To assist your understanding, we will first acquaint you with the USAIS philosophy of education. From there we will proceed to the training program presented by the Instructor Training Section. Then we will consider the preparation and organization of instructional materials and the training devices and aids available to assist in the presentation of this material.

Visualize the student as the center of a five-pointed star, each point representing a key concept of our philosophy of training. Instruction at the Infantry School is based on a sound philosophy of training designed to satisfy the USAIS mission. We accomplish this in many ways, one of which is insuring that our instruction is "student centered." Each lesson is planned and oriented upon the student's present and future needs. Because this consideration is so important, a continuing process of revision is necessary to insure that programs of instruction meet these needs. Please notice that this concept represents a basic departure from the educational philosophy of many civilian institutions of higher education which are "instructor" or "subject centered."

We also insure that USAIS instruction is "problem oriented." It is no secret that students learn best when they actively participate in the learning process. Recognizing this, we require our students to solve realistic problems closely paralleling actual combat situations by the application of sound Infantry principles, techniques and skills. Why do we place so much emphasis on the problem-solving method of instruction? Because it places the burden of learning directly upon the individual student. When students become personally involved in the learning goal, interest and participation are higher and greatly assist the learning process.

Yes, the problem-solving method of instruction is used more extensively at the Infantry School than any other method. However, this does not mean that this is the only method used. Because no one method can accomplish all the diversified types of USAIS training, we stress the proper combination of instructional methods - fitting the method appropriately to the different portions of the presentation. The instructor constantly reexamines existing methods to insure that they are the best to attain the desired learning goals. In addition to this, he maintains a progressive attitude and an open, flexible mind toward new methods, devices and training aids.

We see that the burden of the learning responsibility is shared by the student. However, because USAIS instruction is based on mutual understanding of training goals, both the instructor and the student need to recognize, understand and appreciate the learning goals for each period of instruction. Worthwhile instruction is possible only when both members of the instructional team are aware of the mission to be accomplished. The instructor takes positive action to increase student motivation to learn. But what's equally important, the instructor himself must also be motivated.

The civilian philosophy of education frequently states that "Individuals differ in their capacity to learn, and each should be educated and trained in accordance with his capacity or willingness to learn." The Infantry School also recognizes individual differences and the desirability of training each individual to the fullest extent of his capacity. However, it believes the principal job is to develop every student in the class to necessary minimum standards of achievement. Infantry instruction emphasizes training the individual to perform as a reliable member of a team, believing that a military commander will function most effectively by utilizing his personnel to the maximum extent of their capabilities.

We readily see then that instructing at the Infantry School is a great deal different and, in many respects, much more demanding than teaching at a civilian school. How then does the Infantry School instructor learn the many methods and techniques expected of him?

THE UNITED STATES ARMY INFANTRY SCHOOL INSTRUCTOR TRAINING COURSE

The Infantry School Instructor Training Course was established to train newly-assigned School personnel who would be serving as instructors in the instructional departments. Our course is designed to allow maximum student performance in practice instructing. The student instructor is required to perform all of the tasks which will be required of the graduate instructors. For example, as a student instructor, he prepares lesson outlines of the material he will present during the course. He plans and uses a variety of training and visual aids and arranges for the problem support available through the Operations Office.

During the early portion of the first week we require all ITC students to take an English Diagnostic Test. This test points out weak areas in the individual's grammar and vocabulary. Once the tests are graded and returned, students know their weak areas and they are encouraged to improve in these areas. In addition to aiding the student, the test results provide valuable information regarding instructor personnel at the Infantry School. The test results do not, however, affect the overall evaluation of the student instructor. His teaching ability is measured by evaluation of each of his presentations during the course.

The course consists of 176 hours of instruction and student performance. One hundred and thirty-one hours, or approximately 75 percent of the course, is devoted to student performance.

During the first week, we require the student to present a two- and a three-minute talk. During the two-minute talk we simply try to determine the individual's strong and weak points. These are recorded on our evaluation sheet. The three-minute talk is critiqued with emphasis on the student's favorable speech and platform techniques.

During the second week, the student expands his three-minute talk to five minutes and includes a joke or humorous illustration which should tie into the talk appropriately. Then for his second presentation during this week he prepares and presents a new five-minute talk on a subject of his own choosing. This presentation concerns the demonstration of a process, the functioning of an object, or the construction of a military item. Here we insist that the student fabricate his training aid rather than use an existing USAIS aid. Following this, the student prepares a ten-minute presentation on a military subject of his choosing and approved by his group instructor. This material is presented by the lecture method of instruction. Beginning with this presentation, the student prepares a lesson outline and is required to follow it during his presentation. The student's next requirement is to expand the ten-minute lecture into a twenty-minute conference utilizing good questioning and discussion techniques. At this point we check closely to determine whether the student instructor fully understands the conference method of instruction.

Following this, the student presents a five-minute persuasive talk. There is no advance student preparation required for the persuasive speaking. The student receives the subject for his talk just before he goes to the platform. His goal here is to take this subject, usually one of a controversial nature, and persuade his audience to join him in his way of thinking. This exercise is designed to allow the student instructor full utilization of gestures, facial expressions, and a variety of techniques needed to "sell" his thoughts to the audience.

During the third week the student prepares and presents a new 20-minute conference which is later expanded to a 35-minute presentation. Here again he gains experience in preparing and presenting instruction utilizing audio-visual aids, various training devices, as well as a variety of methods and techniques. The student's last presentation during the third week is the three-minute impromptu talk. This is designed to give him practice in thinking on his feet. During this brief presentation, the audience is permitted to confront him with questions of any type, disagree with his statements, and in general attempt to test his platform poise. The group leader checks the instructor's composure and determines his ability to cope with unplanned situations and questions which often arise during a "live" presentation.

Following the three-minute impromptu, we move into the fourth and final week of the course. Here the student presents an existing 50-minute problem. For this practice presentation and the final presentation the student exercises his initiative, for he arranges all the support necessary to present the instruction. He will be required to brief his assistant instructors and be able to demonstrate his knowledge and application of all he has learned during the preceding three weeks. During the 50-minute practice and final presentations we encourage personnel from the student's department or committee to sit in to determine the accuracy of the material being presented. Following this presentation, the student is critiqued and "polishes up" any weak areas prior to presenting his final. The final 50-minute performance is the culmination of all his hard work and preparation. Many of the departments assign this student instructor a subject which he will eventually be teaching to resident classes. Having mastered this one presentation, the instructor is equipped with the necessary confidence to go on and begin teaching to "live" resident classes.

Up to this point we have been talking almost exclusively about the training of the instructor for instructional presentations. However, before he can rehearse even once for a subject he

will present, he must be able to organize his material in logical sequence on paper. This calls for a thorough understanding of lesson organization.

PREPARATION AND ORGANIZATION OF INSTRUCTION

In the Instructor Training Course we teach that a good lesson outline is worth at least two rehearsals. There is no substitute for careful research and study for proper preparation and organization of instructional material. To emphasize the importance of preparation, we normally plan for a new instructional problem at least a year in advance. All of our problems are reviewed for currency at least once a year. Improvements which arise as a result of post-presentation critique are incorporated into the next presentation. Because we demand constant and extensive research by our instructors, we keep our methods, techniques and subject matter up-to-date.

When research is completed, the material is organized into a logical plan, going from simple to complex and known to unknown, or whatever order will make best sense to the student. Each presentation is organized into three distinct parts: the introduction, the body, and the conclusion. In the introduction we spare no efforts to gain the student's attention and then to orient him. There are many ways to gain the student's attention. Some people do it simply by moving to the center of the platform and starting to talk. Other instructors welcome the class, tell a story, use a quotation, or even stage a skit. The orientation includes: a tie-in to previous or future instruction; motivation to illustrate to the student why it is important that he learn; a statement of the scope of the presentation to alert the student on what is to follow and the objectives or goals to be attained; the method or methods of instruction that will be used; and, finally, in the application we emphasize when or where the student will put the knowledge gained to practice.

Now we have completed the appetizer and we're ready to tackle the main course. The body of the lesson outline is built around teaching points.

A teaching point is a statement in complete sentence form of a specific and significant principle, doctrine, technique, skill or element of knowledge that students should understand and/or apply as a result of a period of instruction. There is no set number of teaching points for a period of instruction. We develop understanding of our teaching points through the use of supporting material. This supporting material may take many different forms. For example, we may use definitions, discussion, practical exercises, examples, comparisons and statistics to support and clarify the teaching points.

To insure continuity and smoothness between teaching points and items of supporting material, the USAIS instructor preplans transitions. These transitions may be a sub-summary of the material just covered as a lead-in to new material, a rhetorical question or a teaching vehicle. By this we mean a reference to the same person or event periodically during the presentation to unify the instruction.

The conclusion "wraps up" the instructional package. In the conclusion, the instructor first checks the status of student attention to insure that it is high. He insures this by a starting statement, a rhetorical question, a quotation from an authority, or one of many means. When all students are attentive, they are ready to receive the summarization of key ideas.

Now we are ready for the summary, and here we review the teaching points with key supporting material.

By this time the student has learned the teaching points of the presentation. Now it is time to indicate to him exactly where and how he will apply the knowledge gained. We believe that a

reference as to how the knowledge will be applied is a worthwhile part of every good conclusion. A strong closing statement, the last element of the conclusion, stimulates the student to action by placing final emphasis on the lesson.

Concurrently with the organization of the lesson, the instructor plans the method of instruction that he will use to present the material. Because of limited student participation, the lecture method is used only when no other method is appropriate. The conference method, guided by the instructor but based on the free interchange of ideas, is our basic method of oral presentation. The demonstration-performance method is widely used in basic officer and enlisted courses in such areas as weapons training. The problem method, however, dominates instruction at the Infantry School since it provides for student doing and the free interchange of ideas during discussion of the solution. Most USAIS instruction integrates two or more of these methods within a period.

The good instructor will make every effort to master the technique of these methods of presentation. The closer he comes to this goal, the more he realizes that even a superior application of any single method will not stand alone. Each method requires good instructional aids to assist student learning. For this reason we at the Infantry School - and specifically in the Instructor Training Section - are constantly experimenting with new training aids and devices.

TRAINING AIDS AND DEVICES

In order for our instructors to best teach their subjects and to insure the highest degree of student understanding, it becomes necessary to use effective training aids and devices. We are extremely emphatic about using training aids if needed and, equally as emphatic, in discouraging their use as merely an entertainment medium or as a crutch for the instructor.

The training aids used here at the Infantry School fall into one of five categories: actual items of equipment, scale models, projections, charts, and chalkboards.

In determining the type of aid to use, we teach the instructor to first analyze his lesson objective. This will tell him the level of learning that is to take place. The lesson objective will clearly state one of three learning levels: orientation or familiarization, and understanding of principles or procedures, and the attainment or development of a particular skill in being able to apply the principles or procedures. Having determined the degree of learning that is desired, the instructor can then plan for the use of aids that will assist him in accomplishing the lesson objective. He will have to decide which type of aid will best fit the teaching situation. Many times a combination of types will have to be used in order to achieve the highest degree of student understanding. We of the Instructor Training Section have as an additional mission the responsibility of experimenting with new aids and devices - both those which have been locally devised and those which industry has developed. We arrange for periodic demonstrations of new equipment and, together with the instructional department directors, make recommendations for the purchase of those aids and devices which will assist the instructors in doing a better job of teaching.

At the present time we are renovating one of our standard classrooms in order that it may be used primarily as an experimental classroom. When completed we plan to incorporate such items as Educational Closed-Circuit TV, Cellomatic slide projectors, and multiple rear-view projection. If all goes well, we will be able to demonstrate many of these items during next year's conference.

There is an old adage which says: "For one to be truly successful, he must hitch his wagon to a star." It has been said that this saying is especially true in the military. The star to which we hitch our instructional wagon at the Infantry School is the student.

The five points of our concept of training surround the student, for our instruction is "student centered." We emphasize learning by doing--placing the student in a realistic situation requiring a solution through proper application of basic principles. A wholesome student-instructor relationship is based upon a mutual understanding of training goals--goals which are attained through a variety of training methods and techniques. Above all else, we teach the individual to serve as an effective member of a fighting military team. Our philosophy is put into practice by careful preparation and organization of all instructional material, using a standardized lesson format and through intensive training of instructors. But this is not enough. The greatest speaker in the world could not hope to hold the attention of his audience with his voice alone. Recognizing this, we are constantly on the lookout for stimulating training aids and devices to assist in the process of student understanding.

If you feel that your instruction is not as effective as it might be, analyze what you are doing by considering what we have discussed today. Then throughout the preparation, organization, and presentation phases of your next period of instruction, apply the principles and ideas explained today in order to insure that your students receive the caliber of instruction that they deserve and demand.

A simple question provides the basic answer to success in the classroom and on the battlefield, "Have I accomplished the mission?"

CHAPTER 13
ASSISTANT COMMANDANT'S FORUM

BRIGADIER GENERAL CHESTER A. DAHLEN

See Infantry Instructors' Conference Report (Classified Annex)

CHAPTER 14

ASSISTANT COMMANDANT'S CLOSING REMARKS

BRIGADIER GENERAL CHESTER A. DAHLEN

Gentlemen, I regret we must bring this conference to a close. All of us here were very happy to have had this opportunity to speak with you again. This has been a jam-packed conference. I know you have made the most of your time, not only here in the classrooms and in the demonstrations, but in the time that has been offered you to go around and talk to various departments. So, based on what we have seen, heard and discussed during the past week, I am sure that we have accomplished the objectives that General Harris outlined in his opening remarks. I think, therefore, the conference has been an even greater success and help than we realize. When you get back, you will realize the value of the associations you have had here at the School, and the ideas that you have kicked around this one week.

Now gentlemen, I would like to emphasize in these closing remarks that the progress we have made in the Infantry during the past few years has been significant. We see new Infantry divisions completely reorganized. We see new organizational concepts, new weapons and new equipment that have been developed and are now being issued to the field. During this conference, you received information on these new ideas from our instructional departments.

The Ground Mobility Department pointed out to you that the M113 carrier, which was only a test vehicle last year, is now in production. Issue to the field has begun. As this carrier reaches units in quantity, we will see much improvement in Infantry mobility. As our mobility becomes greater, so must our ability to navigate. Now more than ever before, the need exists for every Infantryman to be able to read a map and to navigate on the ground. We have improved the methods of teaching map reading and land navigation and have had those subjects included in the basic training program.

Probably the most important developments in the Infantry since last year's conference have been in firepower. The M14 rifle and the M60 machinegun are now in production. The M14 is being issued to the field, and soon we expect to start receiving the M60. With these events, the long overdue modernization of Infantry small arms firepower has begun. Granted, it is going to take longer than we want to replace the M1 rifle, the BAR, the carbine and Browning machinegun completely, but at least the process has started.

Soon nuclear firepower will become a tool of the battle group commander. Development of the Davy Crockett weapons system has progressed rapidly; if this continues at its present rate, we can expect to have this nuclear weapons delivery system on hand at the Infantry battle group level in the near future. I'm sure you realize the tremendous impact that will have on tactics and concepts.

These then are some concrete examples of improvements made in Infantry organization over the past year. I will define them as improvements in our ability to move, shoot, and communicate. We must never allow ourselves to feel we have the ultimate — there is still further need for improvement within our units. In that connection, you have had a brief glimpse of the future. Perhaps many of you were astounded at some of the things you saw or heard. Some of you probably feel that our "dreamers" have gone way out on a limb; perhaps you are right. I don't know what the future Army will be like or how our future battles will be fought. But by pooling the efforts of many brains, we will be able to make reasonable predictions. So if you have something to offer which may assist us in planning for the future battlefield, tell us about it.

I will conclude with this thought: A successful conference is really a year-round affair. I hope that if back at your home stations some of you have problems for which you have no solution or information you need, you will write us. I can assure you the Infantry School stands ready to give you or any Infantryman its utmost cooperation and assistance. You may also have constructive criticism on our doctrine, our concepts, our methods of employment - we would welcome your ideas. I urge you to share your thoughts with us. As a branch "clearing house" we always have an open door to suggestions and comments. Much of our recent progress in tactics, equipment, and weapons has come about because Infantrymen such as you shared their thoughts and ideas with us. I sincerely hope that this fine relationship will continue.

I hope that your visit was profitable. Good luck to you and have a safe journey home.

APPENDIX I

CONFEREES ATTENDING

1960 INFANTRY INSTRUCTORS' CONFERENCE

11-15 JULY 1960

<u>INSTALLATION</u>	<u>NAME</u>	<u>RANK</u>	<u>SVC NR</u>	<u>BRANCH</u>
Office, Chief of Staff for Military Operations, DA, Wash 25, D. C.	R. D. Hyde	Lt Col	035949	Inf
	William E. Zook	Maj	027708	Inf
Hq USCONARC Ft Monroe, Virginia	Arthur M. Hillery, Jr	Lt Col	0410116	Inf
	Richard A. Beyer	Lt Col	038263	Inf
	Clark W. Porter	Lt Col	046162	Inf
Hq USA Caribbean Command Ft Amador, CZ	Alden P. Shipley	Lt Col	033699	Inf
	John A. Seddon	Lt Col	063057	Inf
	Grover G. Smith	Lt Col	080001	Inf
USA Artillery and Missile School, Ft Sill, Okla	Marcus W. Adams	Col	040025	Inf
	Ernest H. Wallace	Lt Col	037552	Inf
USA Armor School, Fort Knox, Ky	Ernest L. Meggs	Lt Col	035474	Inf
	Eric Kobbe	Lt Col	062175	Inf
	Joseph P. Rice	Capt	064103	Inf
USA Medical Service School Brooke Army Medical Center Ft Sam Houston, Texas	Edward E. Fitzpatrick	Capt	01686747	Inf
	Robert E. Phelps	Lt Col	024165	Inf
USA Signal School, Ft Monmouth, N. J.	Morton Wolfson	Lt Col	048975	Inf
	James J. Nowicki	Maj	01303014	Inf
USA Engineer School Ft Belvoir, Va	Claude R. Hinson	Lt Col	051922	Inf
	Landin F. Boring	Capt	068913	Inf
USA Transportation School Ft Eustis, Va.	Matthew L. Brooks	Maj	01317145	Inf
USA Ordnance Guided Missile School, Redstone Arsenal Huntsville, Ala	Charles W. Holmes	Lt Col	0400264	Ord
	Lary F. O. Lawson	1st Lt	070205	Ord
USA Ordnance School Aberdeen Proving Ground, Md	James N. Hanson	Capt	065600	Inf
	Benjamin L. Gunter	Capt	062202	Inf
USA Provost Marshal General's School, Ft Gordon, Ga.	W. E. Boyd	Lt Col	080598	Inf
	Charles G. Ross	Maj	060623	Inf
USA Chemical Corps School, Ft McClellan, Ala	Paul Koenig	Maj	084641	Cml
	John D. White	Maj	081333	Inf

<u>INSTALLATION</u>	<u>NAME</u>	<u>RANK</u>	<u>SVC NR</u>	<u>BRANCH</u>
USA Finance School, Ft. Benjamin Harrison, Ind	Michael A. Dempsey	Maj	079796	Inf
	David F. Bird	Capt	02262997	Inf
USA Judge Advocate General's School, Univ of Va, Charlottesville, Va	Herbert C. Byrd	Maj	084348	Inf
USA Command and General Staff College, Ft Leavenworth Kansas	A. K. Harrold	Col	032417	Inf
	M. E. Nolan	Lt Col	053275	Inf
USA Security Agency Schools, Ft Devens, Mass	J. J. Wessmiller	Lt Col	054052	Inf
	R. J. Byrne	Lt Col	0395777	Inf
Royal Canadian School of Infantry, Borden, Canada	Royal E. Brown	Maj	080050	Inf
USA War College, Carlisle Barracks, Pa	Patrick D. Mulcahy	Col	022015	Inf
	Fred H. Cantrell	Col	025295	Inf
USA Special Warfare School, Ft Bragg, N. C.	Donald C. O'Rourke	Lt Col	036611	Inf
	Walter E. Coleman	Maj	070081	Inf
USA Adjutant General's School Ft Benjamin Harrison, Ind	Francis L. Douglass	Lt Col	024254	AGC
	Richard S. Krafski	Capt	070404	Inf
Armed Forces Staff College, Naval Operating Base, Norfolk 11, Va.	Alton R. Taylor	Col	033092	Inf
	John H. Donaldson	Col	032721	Inf
Marine Corps Schools, Quantico, Va.	Robert D. Bohn	Lt Col	037498	USMC
USA Quartermaster School Ft Lee, Va	James B. Saum	Maj	059878	Inf
	Jarvis K. Shaffer	Capt	059888	Inf
Naval Training Devices Center Jacksonville, Fla	Thaddeus A. Wilkinson	Civilian		
Naval War College Newport, R. I.	Robert G. Fergusson	Col	020267	Inf
	Clarence A. Mette, Jr.	Col	032776	Inf
USA Information School Ft Slocum, N. Y.	Edward Comer	Maj	01317888	Inf
USA Chaplains School, Ft Slocum, N. Y.	Chester R. Lindsey	Chap (Maj)	079686	Chap
	John W. Betzold	Chap (Maj)	076785	Chap
USA Intelligence School Baltimore, Md	Virgil E. Craven	Lt Col	034824	Inf
	James M. Robertson	Maj	01324654	Inf

<u>INSTALLATION</u>	<u>NAME</u>	<u>RANK</u>	<u>SVC NR</u>	<u>BRANCH</u>
USA Aviation School, Ft Rucker, Ala	Ralph H. Vohs	Maj	076926	Inf
	John S. Kark	Capt	080124	Inf
USA Signal Training Center Ft Gordon, Ga	Andrew Kiyfes, Jr	Capt	01648061	Sig
	Paul C. Fleri	Capt	059251	Sig
USMA, West Point, N. Y.	Charles E. Spragins	Maj	027712	Inf
USA Air Defense School, Fort Bliss, Texas	Edward H. Cope	Maj	065037	Inf
	William C. Heard	Capt	069672	Inf
Infantry Officers Division, Officers Assignment Directorate, DCSPER, DA, Wash 25, D. C.	Denzil L. Baker	Col	043052	Inf
	Beverly Read	Lt Col	046180	Inf
USN Naval Training Devices Center, Port Washington, N. Y.	Harry G. Benion	Lt Col	020872	Inf
	Douglas Copeland	GS-12		
	Clarence Papetti	Civilian		
Landing Force Training Unit, Atlantic Amphibious Training Command, U.S. Atlantic Fleet, U.S. Naval Amphibious Base Little Creek, Norfolk, Va	James Dowling	Capt	065985	IC
US WAC School Fort McClellan, Ala	Margaret E. Brewster	Lt Col	L-88	WAC
	Elsie J. Chapman	Major	L-261	WAC

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